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Full Name of Author — Nom complet de l'auteur

RAKESH KUMAR DHIR

Date of Birth — Date de naissance	Country of Birth — Lieu de naissance
2 MAY, 1959	INDIA

Permanent Address — Résidence fixe

10917 – 79th AVE.
EDMONTON AB T6G 0P1

Title of Thesis — Titre de la thèse

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1983	G. D. LAXER

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EDUCATION AND JAPANESE ECONOMIC GROWTH: A SOCIOLOGICAL ANALYSIS

by

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled EDUCATION AND JAPANESE ECONOMIC GROWTH: A SOCIOLOGICAL ANALYSIS submitted by Rakesh Kumar Dhir in partial fulfilment of the requirements for the degree of MASTER OF ARTS.

Gordon D. Laxer

Supervisor

Tokan Prakasha

T. Tsushima

Date Oct 12 1983

To my parents.

Abstract

This thesis examines how education contributed to Japanese economic growth in the postwar period (1950-80). It will be argued that education is not a skill provider alone; it is also a socializing agent. Workers' motivations make an important contribution to workers' and organizations' performances.

It is argued that Japanese education, while increasing an individual's ability to perform a task, also has some attitudinal effects. Japanese workers acquire traits of competition, conformism and hard work while going through the process of education. When these personal traits and skills are applied in a work situation, they make an important contribution to labor productivity. Skills alone do not bring about effective job performance; the traits of competition, conformism and hard-work (which the Japanese acquire from school) motivate them to produce more. Finally, higher labor productivity leads to higher economic growth.

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1. INTRODUCTION

Japan is the only non-western and non-white country to achieve a very advanced economy in spite of a paucity of raw materials and land. The dependency on imports of natural resources is higher in Japan than in Germany, the United States, France and the United Kingdom.[1]

Japan was an industrialized country before World War II, but economic success in the postwar period has been miraculous (Miyazaki, 1982:88). The gross national product rose from 14.2 billion U.S. dollars in 1951 to 1,127 billion in 1981. The increase in gross national product in Germany, France, U.K. and the United States has been much lower.[2]

> Japan has come to dominate in one selected industry after another--eclipsing the British in motorcycles, surpassing the Germans and the Americans in automobile production, wresting leadership from the Germans and the Swiss in watches, cameras, and optical instruments, and overcoming the United States' historical dominance in businesses as diverse as steel, shipbuilding, pianos, zippers, and consumer electronics (Pascale and Athos, 1981:20).

The Japanese standard of living is equivalent to that in other Western nations. Now the Japanese workers earn more than workers in Germany.[3] If we compare annual earnings of a typical worker in Japan, U.S., Canada, Australia, U.K., France and Italy, we find that in 1980, a typical worker in Japan earned more and was able to keep more money when compared with a typical worker in other nations.[4] In Japan,

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[1] *An International Comparison*, Keizai Koho Center, Japan, 1982:56.
[2] See appendix, Table 1.
[3] *An International Comparison*, Keizai Koho Center, Japan, 1982:60.
[4] See appendix, Table 2 for details.

the life expentancy at birth rose from 42.06 years for males and 43.20 for females in 1925 to 73.79 for males and 79.13 for females in 1981.[5]

This analysis will compare Japan with other advanced nations because labor productivity and economic growth have slowed down in the latter but Japan has achieved miraculous economic success in the postwar period. A rigorus comparison will be made between Japan and the United States because some futurists have argued that Japan will surpass the United States in terms of gross national product by the year 2000 (Kahn and Pepper, 1979).

How did Japan achieve economic success? Mainly by exporting.[6] "Japan ranks third following the United States and the Federal Republic of Germany both in exports and imports."[7] From 1969 to 1981, Japan exported $21 billion worth more goods than it imported (Statistical Survey of Japan's Economy, 1982:43). The raw materials are imported and all major kinds of consumer products are manufactured in Japanese industries and then exported world-wide. In 1981, the major manufactured products exported included cameras, watches, motorcycles, bicycles, telephone sets, VTRs, Color TVs, radios, microwave ovens, washing machines, electrical refrigerators, autos, and calculators.[8] To manufacture these

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[5] *An International Comparison*, Keizai Koho Center, Japan, 1982:2.
[6] Some debate that growth of products in larger quantities at home led to exports, rather than exports leading to growth.
[7] Statistical Handbook of Japan, 1980:80.
[8] MITI, *Ministry of Finance*, Japan, 1982.

products, a highly skilled labor force and high sophistication in technology and science are required.

Therefore, despite the paucity of natural resources and land, Japan achieved remarkable economic success during the postwar period. How was Japan able to attain economic success? Reasons given for Japanese success are many and varied,[9] but we argue that labor productivity was an important source of Japanese economic growth in the postwar period. We will focus on labor productivity because this factor distiguishes Japan from other advanced nations.[10] Major factors which may lead to high labor productivity are: capital, technology, education, and attitudes of the labor force.[11] These factors are interrelated and thus, we realize that there are overlaps between these factors in terms of how they affect labor productivity.

With the help of capital, new and better equipment and technology can be bought--which may increase labor productivity. Technology and equipment help to make the work-process more efficient. With the help of technology and new equipment, better quality as well as larger amounts of products can be produced. A skilled labor force is vital to introduce technological innovations in industries. Education is a major determinant of the quality of labor force. Skills

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[9] Since details are provided elsewhere, we need not to elaborate them. Only key factors which may contribute to economic growth of any nation will be discussed in detail in the second chapter: capital, labor and technology.

[10] An elaborate discussion on labor productivity will be provided in the second chapter.

[11] In the second chapter, these factors will be studied in detail.

increase an individual's ability to perform a task. Skills alone do not bring about effective job-performance, "motivation is a significant link between talent and performance" (McKee, 1969:106). Therefore, attitudes of the labor force have a decisive influence on the quality of work performed. Pascale and Athos (1979:26) argue that: "Today world competition poses an organizational challenge that cannot be met simply by technology or financial resources. Technological innovations and resource allocation are outcomes of *human* processes."

The contribution of human resources has been vital for Japanese success in the postwar period.

> In case of Japan,...the quality of workers is high and their willingness to develop and improve existing facilities is strong, and that the accumulation of such minor efforts brought about an increase in productivity and qualitative improvement of products. The development of the Japanese economy was indeed sustained by the creativeness and ingenuity of Japanese workers (Economic Survey of Japan, 1979/80: 159).

From the foregoing discussion, it is apparent that quality of Japanese work-force has been a vital source of Japanese economic growth in the postwar period. Therefore, we should study the determinants which affect the quality of labor force.

This analysis is limited to exploring the role of formal education as a skill provider and as a socializer in Japanese economic growth. The role of education as a skill provider has been given some attention,[12] but a study of

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[12] See Denison and Chung, 1976.

effects of attitudes on labor productivity has been neglected. Therefore, we will give less coverage to the skill providing dimension of education and pay more attention to the effects of attitudes on labor productivity.

We argue that Japanese workers have attitudes of competition, conformism and hard work, which motivate them to produce more and thus contribute to labor productivity. Several explanations are given for the industrious character of the Japanese.

Nakane (1974) and Vogel (1979) argue that the Japanese tend to give priority to group activities. Human relations are based on respect for other members of the group. These group activities and human relations have made the Japanese diligent workers. This is the "cultural uniqueness hypothesis" (Koshiro, 1980).

Although we agree that the Japanese are diligent because they have a unique culture, it is not fair to overemphasize the effect of "cultural uniqueness" of the Japanese for two major reasons.

"Culture in the broader sense consists of the patterns of ideas, beliefs, values and knowledge that the members of a social group or society have about themselves and their social and physical environments" (Weeks, 1975:16). It is a well established fact that the attitudes of people change over time because of changes in the environments that surround them . According to this position, after almost one hundred years of capitalism in Japan, people's attitudes

should have undergone changes because of changes in life-styles and the introduction of modern values. The Japanese adopted western techniques and technology, but they have preserved their ethics of hard-work and "groupism". The question is why. This hypotheses does not explain that.

Moreover, the attitudes are learned[13] and for them to be maintained over a long time, major institutions such as the mass-media, family, work-situation and school play a major role.[14] Thus, we should explore which institutions have helped to maintain these ethics.

School, the mass-media, the work-situation and the family are major socializing agents. These socializing agents may perpetuate the same or different values in a society. Socialization continues throughout one's life, and is of two major types: childhood (or early) socialization and adult socialization.

> Childhood socialization emphasizes development of the values and motives that will ultimately shape behavior while, in adult socialization, there is more emphasis on the behavior itself. Most adult socialization involves little attempt to change values or to influence basic motivations; it involves the learning of new role expectations and new role performances (Leslie *et al.*, 1976:129).

This analysis is limited to examining formal education as an important socializing agent. We argue that, since attitudes are strongly affected by the socialization in the younger years, we will explore the possibility that the Japanese acquire work-related attitudes when they are in

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[13] Cummings, 1980.
[14] Kosai, 1982:61.

school. It does not however, mean that other institutions such as the mass-media, the work-situation and the family do not play a role in inculcating values, but it is argued that education makes a significant contribution on its own. Studies done by different scholars also suggest that education is a key perpetuator of values among the Japanese. Fukutake (1974) and Cummings (1981) argue that school is a key agent to perpetuate values among the Japanese, and that the family has less effect on the formation of values than school. Shuichi (1974) argues that although the mass-media influences people's opinions, school is a key perpetuator of values.

It is expected that these attitudes may be reinforced in a work-situation. Shuichi (1974) argues that although the company influences workers' attitudes, it does not have as much effect as the formal school system.

In sum, we agree that the mass-media, the company and the family may inculcate the values of competition, conformism and hard work, but we argue that school makes a significant contribution on its own.[15]

Do the attitudes of conformism, competition and hard work stay with the Japanese when they quit or finish school and go to work? Does the structure of employment contribute to reinforcing these values? We will examine these questions.

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[15] A detailed discussion on the role of school as compared to other institutions such as mass-media and the family will be provided in the chapter five.

In Japan, people work for three major types of firms: large, medium and small. Japanese employees can be divided into two major categories: (1) those who work under the life-time employment system and (2) those who do not. Usually, large firms offer life-time employment to their employees, and it is estimated that 30-40 percent of the work-force is employed under such a system.[16] Life-time employees are primarily hired on the basis of their initial education. People with higher education and those who have received education from reputed schools are more likely to be employed by the firms offering life-time employment.[17] Life-time-employees are offered high wages, stable employment and bonuses. Wages and promotions for life-time-employees primarily depend on their initial education and length of service. Personal ability, although considered important, is more likely to provide social status and respect among co-workers rather than higher wages. An able person may get a more important position in the firm than a less able one, but both are likely to receive similar wages. Thus, material rewards are not major motivations for people to work hard.

Usually, medium and small-sized firms are not able to offer life-time employment due to the financial costs involved. Generally, those who cannot get a job with a large firm, work for medium and small-sized firms. People working

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[16] Ouchi, 1981.
[17] An elaborate disccusion will be provided in the chapter five.

for these firms do not enjoy high salaries, stable employment, and "fringe benefits as extensive as those of their larger counterparts." Non-life-time employees are highly motivated to work hard, because their wages and promotions depend more on their personal ablitiy and performance than on their initial education and length of service, as in the case of life-time employees. Education is not as important for non-life-time employees as it is for life-time employees.

Although both life-time and non-life time employees are likely to work hard for personal rewards, we notice that non-life-time emplyees are more likely to work hard for financial rewards than life-time employees. Both life-time and non-life-time employees work hard because the structure of the employment system reinforces people to do so.

Workers are continuously evaluated by their employers and co-workers. Therefore, in a work situation, the Japanese work hard because (1) they want promotions and financial rewards and (2) because if they do not work hard they may lose respect, status and power within the firm.

In Japanese firms, people are expected to work in groups. If some of the employees do not like such a system, sanctions can be levied against them. They may lose respect from their co-workers and employers. Therefore, the structure of employment perpetuates and reinforces the phenomenon of "groupism". In sum, reinforcement of attitudes of hard work and "groupism" continues in later years in work

situations. We wish to develop an argument as to where these attitudes of competition, conformism and hard work are developed.

Our study is narrowed down to examining the role of formal education as a skill provider and as a socializer. This analysis is narrow in the sense that we are examining only one socializing institution, formal education, among all the other institutions. We realize that continuing reinforcement of these attitudes in work situations also contributes to maintain them. Therefore, the explanatory value of our variable is limited. However, we argue that, formal education is an important and independent institution that inculcates the values of competition, conformism and hard work among the Japanese.

This is an exploratory study and therefore, conclusions drawn will be tenative. However, we will attempt to discuss issues raised in an analytical and logical manner. For an exploratory study of this kind, it is essential to make few assumptions.

1.1 Assumptions

It is precisely because the Japanese have a unique culture, tradition, ethos and habits that we assume what may be possible in the Japanese society may not be possible in other societies.

Vogel(1979) ana Asakura(1982) state that there exists a harmony between different sectors of the economy

(government, business and workers) and between various classes in the Japanese society.

Assuming that capital, technology, environmental and organizational factors remain constant, we wish to study the contribution of labor to the economic growth in Japan.

Assuming that structural and environmental factors remain constant, we will examine the contribution of formal education to the economic growth of Japan.

1.2 Statement of the Problem

The overall purpose of this study is to examine how formal education of the labor force contributed to the economic growth of Japan in the postwar period. Some economists have examined the relation between education and the economic growth of Japan. They claim that an increase in education increases productivity of the labor force and due to an increase in productivity, national income increases (Denison, 1962; Schultz, 1961). This explanation is challenged by others who argue that

> It is...difficult to determine how much of the apparent effect of education on incomes is the effect of ability, or other unobserved variables, on productivity and a high correlation between these variables and education, and how much it is the result of education per se. Furthermore, the mechanisms through which education has its economic effects--how much is due to cognitive skills, such as literacy and numeracy, and how much to such traits as modernity of attitude, adaptability, willingness to accept work discipline, and so on ....(King, 1980:vi-v).

A sociological explanation is sought to examine if education contributes to labor productivity by providing skills and

motivations.

It is argued that Japanese education, while increasing an individual's ability to perform a task, also has some attitudinal effects. Japanese workers acquire skills and the attitudes of competition, conformism and hard work while they are in school. Skills alone do not bring about effective job performance; the traits of competition, conformism and hard-work (which the Japanese acquire from school) motivate them to produce more.

This thesis can be stated in terms of three propositions:

1. With capital and technology remaining constant, formal education by increasing skills and abilities or quality of the labor force, will lead to high labor productivity.
2. With capital, technology, and skill levels remaining constant, workers' strong attitudes of competition, conformism and hard work will lead to high labor productivity.
3. Formal school is an independent and important inculcator of attitudes of competition, conformism and hard work.

Based on these hypotheses, the following research questionss will be examined.

Was labor productivity an important source of economic growth in Japan in the postwar period? The second chapter examines this.

Is education a skill provider? Does education have attitudinal effects? Does curriculum affect attitudes or structure of the educational system affect attitudes or both? The third chapter examines these questions.

How did education in prewar and postwar Japan contribute to economic growth in the postwar period? Was educational supply (both in quantity and quality) adequate for the economic needs of Japan in the postwar period? How important was increased education in Japanese economic growth? Answers to these questions will be sought in Chapter 4.

In addition to providing people with skills and training does Japanese education have some attitudinal effects? Do Japanese workers acquire personal traits of competition, hard work and conformity during the process of getting an education? Does a combination of skills and attitudes leads to higher labor productivity? How do these personal traits affect labor productivity? These issues will be analyzed in Chapter 5.

2. LABOR PRODUCTIVITY AND JAPANESE ECONOMIC GROWTH

It is argued that skills and attitudes of the labor force toward work have decisive effects on the quality of work performed. Before we examine the effects of skills and attitudes of the labor force, we should analyse if labor productivity was an important source of Japanese economic growth. To do that, we should examine those factors which may contribute to economic growth of any nation: capital, technology and labor.

2.1 Capital and Productivity Increases

Japan's labor productivity increased steadily during 1953-79 but capital productivity rose during 1955-64, and then declined and energy productivity showed only a slight upward movement after 1974.[18] Although the contribution of capital formation, influenced by high personal savings ratios in Japan, was crucial to Japanese success (Denison and Chung, 1976), it is not the real reason for Japan's high productivity. There are two main reasons: (1) labor productivity rose even in those periods when capital productivity declined; (2) in the other nations such as the United States, where capital formation has been adequate (Reich, 1983:44), productivity has been much lower than that

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[18] For details, see Chart II-2-22 in *Economic Survey of Japan*, The Japan Times, Ltd., Tokyo, 1979/80:156-7. Labor productivity= real GNP/workforce; Energy productivity=real GNP/domestic final energy demands; and capital productivity= production index of manufacturing industries/(manufacturing industries' capital stock x capacity utilization rate).

of Japan. Reich elaborates on this factor:

> Inadequate capital formation (in the United States) has not been the problem...Between 1965 and 1980, even in the face of inflation, the country continued to invest about 10 percent of its gross national product in plant and equipment; for the period between 1977 and the present, the rate is more than 11 percent, and early last year it reached 11.7 percent--its highest level since 1928. Indeed, investment in *manufacturing* as a percent of the total output of goods increased substantially--from 10.8 percent between 1960 and 1964 to 14.8 percent between 1973 and 1978. This level of manufacturing investment was not significantly below that of America's foreign competitors (ibid.).

In sum, although capital formation undoubtedly was a key factor in Japanese economic growth the "...presence (of capital) and its contribution have depended on other factors, particularly the adaptations in employment and the application of the new techniques or, more generally, knowledge" (Saso and Kirby, 1982:54). This brings us to examine the role of another factor of production: technology and equipment.

2.2 Technology and Economic Growth

Technology and new equipment have a decisive effect on economic growth. Japanese manufacturing has experienced a remarkable growth rate in labor productivity in the postwar period (see appendix, Table 3). Labor productivity was, to a large extent, influenced by new technology and equipment. New technology and equipment helped make the Japanese efficient workers. But technology was not the sole determinant. Japan made significant economic gains even in those periods when she was technically inferior to other

advanced nations. For example, between 1950-70, when Japan's technology and equipment was inferior to that of the United States, the growth rate of its labor productivity was higher. After the 1970's, when the Japanese achieved a similar level of technological sophistication as the U.S., the growth rate of its labor productivity remained higher.

The funds allocated to research and development are lower in Japan (18,622 million U.S.$) than in the United States (54,296 million U.S.$).[19] Japan imports more technology from other nations than it exports (ibid.:17). Therefore, Japan is dependent on other nations for technology. The Japanese have been imitators and innovators but not inventors. Some argue that the Japanese were unable to invent because they had "fewer geniuses" (Masatsugu, 1982:15-6). Others contend "...that qualitatively Japanese scientists and engineers, because of their rather standard undergraduate training, may be best suited to catch-up, than to pioneering technologies."[20] There is no doubt that rapid productivity gains are easier when existing technologies can be borrowed. Borrowing technology has been cost-effective to the Japanese, and they indeed, benefitted a great deal from it.

Some argue that Japan achieved economic growth on the basis of borrowed technology (Ozawa, 1974). Although there is sufficient evidence to suggest that borrowed technology

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[19] *An International Comparison*, Keizai Koho Center, Japan, 1982:16.
[20] Cited in Saso and Kirby, 1982:42.

played a vital role in Japanese success. Oldham (1968) argues that Japan achieved economic growth not on the basis of borrowed technology alone, but by a combination of borrowed technology and research and development at home.[21] In Japan, high-level skills were developed, and the Japanese skilled labor force was able to improve borrowed technologies and equipment to fit their own needs. With this combination of borrowed technology, a skilled labor force and research and development at home, the Japanese were able to develop industries which were competitive with other advanced nations (ibid.).

Why have other advanced nations, which have been better at inventing new technologies than Japan, experienced lower economic growth? Also, why if: "technological innovations can be bought or imitated by anyone and high-volume standardized-production facilities can be established anywhere"[22] have other advanced nations lagged behind Japan? For example, "Britain has consistently led the world in major technological breakthroughs, such as continuous casting for steel, monoclonal antibodies, and CAT-scan

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[21] He argues that "between 1957 and 1964 roughly the same number of agreements were negotiated between Japanese and foreign enterprises as were negotiated between Indian and foreign enterprises. The principal difference was that very few Indian enterprises carried out their own research and development" (p.186). On the other hand, Japan spent "between four and five times as much money on industrial research and development as she (did)..on importing foreign technology" (ibid.). Oldham (1968:188) argues that the "lack of industrial research and development is not the only reason that India has not been as successful as Japan in industralization, but evidence suggests that it may be one of the more important reasons."

[22] Reich, 1983:47.

devices" (ibid.). Why has Britain's economic growth lagged? Reich argues that because "British businesses lacked the organization and their workers lacked the skills necessary to incorporate these inventions into production processes quickly enough, the British have reaped no real competitive advantage from them" (ibid.). Japan has certainly benefitted a great deal from these technologies, by using them with the help of a skilled and motivated labor force and by doing research and development at home. Therefore, the invention of new technologies and equipment alone is not enough for economic success. A skilled labor force is needed to make use of the new inventions.

In sum, if capital and technology are the real reasons behind high productivity, other countries would have performed better than Japan. Why have they not? This brings us to our next factor of production--labor. How has labor contributed to economic growth? Has labor productivity in Japan been higher than in other advanced nations? If yes, why?

2.3 Labor Productivity and Economic Growth

The labor force can be divided into two major categories: management and rank-and-file workers. We wish to examine the contribution of both management and rank-and-file workers in the economic growth of Japan.

Some economists have examined labor as a source of economic growth in the past (Denison and Chung, 1976) but

their approaches are limited. They studied the effects of the increasing level of education on the economic growth of Japan but ignored the attitudes, behavior and the personal abilities of the Japanese workers. These factors should be studied because the attitudes and personal abilities of the labor force have a decisive influence on the quality of work performed (England, 1982; Pascale and Athos, 1981; Ouchi, 1981; Leibenstein, 1978; Guillain, 1970). If the attitudes of the labor force affect its job-performance, why has its study been neglected in the past? Robert Guillain (1970:79) argues that the Western economists did not study these factors because they "...do not lend themselves to statistical analysis." Furthermore, he maintains that one of the main factors responsible for Japan's miraculous growth is the Japanese themselves.(ibid.). Guillain explains:

> Why has Japan succeeded? Because of the Japanese. For the Japanese make up an intensely industrious nation, filled with a tenacious desire to get on, to progress, enthusiastically devoted to everything new, and capable of tireless exertion in order to succeed; they will work with a disciplined, obstinate steadiness and they will live with a frugality that is scarcely ever to be seen in the West today...The Japanese success must be credited to the great mass of the Japanese workers, who in addition to their virtues and failings, are above all set apart by a wonderful driving zeal for work (ibid.).

The highly skilled labor force "...provided the basis for technical innovations and the introduction of highly sophisticated technologies and skills developed in Japan" (Economic Survey of Japan, 1979/80:135). And a combination of highly skilled work force and sophisticated machines

proved to be a vital source of economic growth.[23]

These factors, neglected in the past, require attention. Therefore, we will now examine the labor productivity in Japan during the post war period. An overview of labor productivity in Japan is provided to demonstrate the high quality of the Japanese work force by international standards. This discussion will also reflect the importance of this factor.

2.3.1 An Overview of Labor Productivity in Japan

Since the growth rate of labor productivity is a reliable and good indicator of economic productivity and "of the dynamics of production", we will focus on it first. Labor productivity is dependent upon capital investment, technology and equipment used. But from our foregoing discussion, it would be fair to assume that capital, technology and equipment can be held constant when we compare Japanese labor productivity with other advanced nations.

In the postwar period, the growth rate of labor productivity was highest among the advanced nations. Taking 100 as a base index for all advanced countries in 1950, the 1965 figures for these nations are, 144 for Britain; 173 for the United States; 193 for France; 256 for USSR; 287 for Germany; 293 for Italy; and 433 for Japan. The 1978 figures are, 194 for Britain; 249 for the United States; 338 for

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[23] Ibid.

France; 460 for Italy; 503 for USSR; 578 for Germany; and 1100 for Japan (Kostin, 1980:601). We find that in terms of the growth rate of labor productivity, Japanese industry outperformed its competitors.

Table 4 provides the "relative indexes of output per hour in manufacturing", and Table 5 presents annual percentage changes in output per hour and output as a whole (see appendix). We notice that in Japan output per hour was higher than in other advanced nations during 1970-81. In Japan, output per hour increased by 10.7 percent during 1960-73; while during 1973-81 it increased by only 6.8 percent. From Table 5, we find that between 1960-81, total output in manufacturing outperformed its competitors.[24]

Another indicator of labor productivity is the productivity per unit of investment. A comparison with other advanced nations suggests that "Japan...produced more per unit of investment: taking 100 as a base index for Japan in 1953, the 1973 figures for the other countries mentioned are, for Italy, 65; 60 for Sweden; 70 for France; 80 for Germany; 40 for Britain; and 70 for the US" (Boulton and Fenney, 1981:67).

So far, we have provided overall labor productivity figures in the Japanese manufacturing sector and compared them with other advanced nations. Now we will turn to individual industries and compare their labor productivity

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[24] A different study concludes similar findings. Physical labor productivity, measured in terms of hourly productivity was higher in Japan than in Italy, France, West Germany and the United States during 1960-79. Source: MITI, Japan.

levels. We acknowledge that comparing the labor productivity levels in the similar industries in different countries is no easy task; but we will make an attempt.

2.3.2 Inter-Industry Comparisons

The Japanese and American auto industries are comparable. General Motors is one of the largest auto manufacturer in the world, and Toyota and Nissan are the second and third respectively. Competition between them is fierce, and at present the Japanese attract a wider market for their autos than their American counterparts. Why? The experts believe that the Japanese make better quality autos, which run better and last longer than autos built in North America.[25]

Levels of productivity are reflected in the number of vehicles produced per worker per year. In 1978, Toyota produced 54.4 vehicles per worker-year and Nissan 40.4 (Oishi, 1982:67). Recently the New York Times reported that "it takes 30.8 hours to build a car in Japan, whereas it takes 59.9 hours in North America" (Oishi, 1982:22). Vogel (1979:11-2) compares the Japanese and British auto industry labor productivity levels:

> In 1975 one Japanese worker could produce about one thousand English pounds worth of cars every nine days, whereas at Britain's Leyland Motors, to produce the same value a worker took forty seven days. In 1976 none of the major European car producers(Fiat, Renault, or Volkswagen) was able to produce as many as twenty cars per man-year and Toyota turned out forty nine...

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[25] McMillan, 1982.

How are Japanese auto workers able to produce more cars a year than American or English workers? We noticed earlier that in Japan, output per hour was higher than in any other advanced nation. Based on that evidence, we can say that the higher physical labor productivity of Japanese manufacturing workers is one of the reasons why the Japanese auto workers are able to produce more cars a year than American or English workers.

It is also indicated that the Japanese work at a faster pace[26]--this may also be one of the reasons why they could produce more autos per worker than their American or British counterparts. Douglas Fraser, then the United Auto Workers vice president, visited Japanese car manufacturing firms in 1972. He commented on the faster pace of Japanese workers than their counterparts in the United States: "...in some plants Japanese workers put together cars at speeds that would not be tolerated by American workers."[27] The faster pace of Japanese workers is a possible reason why more vehicles per worker-year are produced in Japan.

A comparison of a ball-bearing factory in Japan and a leading factory in the same field in the United Kingdom was done. It was noticed that "...a typical Japanese worker in the ball-bearing factory produced about three and one-half times as much as a worker in RHP, the leading English manufacturer" (Vogel, 1979:12).

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[26] Cited in Cole, 1976.
[27] This statement appeared in the New York Times, 19 June, 1972, cited by Koya Azumi and C.J.McMillan, 1976: 216.

Graham Hutton (1980), an economist, compares the productivity per employee in two comparable firms in Japan and the U.K. He claims that the productivity per employee in manufacturing firms established in England, in which comparable or even more money is spent on the new equipment, is less than their counterparts in Japan (p.11). In the same book, he suggests that to achieve gains in overall productivity levels in the industries in the United Kingdom, a considerable improvement in the productivity per employee is required. However, he thinks that this may not be easily possible because of the attitudes of workers. He points out that the union leaders contend that "(We) are not born to work, we are born to enjoy life; work is only part of it...". These attitudes toward work hinder productivity rather than enhance it (p.28).

The Japanese music instrument manufacturers have outperformed their counterparts in the United States. In this case, the important fact is that Japanese music instrument industries are not even comparable to those in the United States. Vogel (1979:10) comments:

> Even in fields remote from Japanese tradition Japanese often outperformed their Western counterparts. By the 1970's the sales of Steinway and other American piano manufacturers were no match for Yamaha; Muramatsu's Western flutes were competing favorably with American ones.

There is no doubt that the new technology and equipment made the Japanese workers efficient. But we find that in those industries in Japan, U.S. and West Germany which have comparable capital equipment ratios (see appendix, Table 6

for definition of capital equipment ratio and details), the labor productivity ratios are highest in the Japanese industries.

A comparison of "...those enterprises which rank first in production value in their respective countries" was done by the MITI. In the field of department stores, despite a lower capital/equipment ratio in the Japanese case, in comparison to the West Germany; labor productivity was higher in Japan than in West Germany.

In the field of comprehensive electrical machinery, despite comparable capital/equipment ratios in Japan and the United States, labor productivity was higher in Japan.

Finally, labor productivity in the public sector is examined. It is assumed that the technology and equipment level in the Japanese and American public sectors is comparable. A Japanese governmental organization compared the growth rate of labor productivity in blue-collar type public sectors in Japan and the United States.[28] They concluded that:

> ...although it is difficult to measure productivity in the public sector, some yearly comparisons can be made in certain operational areas measuring the work load is relatively easier. For example, if we index the average per worker work load accomplished during fiscal 1970 through 1972 at 100, we find that the index for fiscal 1976 through 1978 had increased to 122.8. This indicates an average annual growth rate of about 3.5 percent...In comparison, the average annual growth rate of productivity for the American public sector--although there are slight differences in the calculating method and the definition of the public sector--amounted to only 1 percent between

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[28] For details, see *Economic Survey of Japan*, The Japan Times, Ltd., Tokyo, 1979/80:229-30.

1967 and 1975...(ibid.).

Although the Japanese public sector was not as efficient as the private sector; its growth rate in labor productivity was higher than the public sector in the United States (ibid.).

As the above examples suggest, labor productivity in Japanese industries is generally higher than in other advanced nations. It is also an important source of Japanese economic growth. Now we will study the role of education as a major determinant of the quality of labor force.

The third chapter examines the theoretical evidence for our hypothesis that education is a skill provider and can have attitudinal effects.

3. EDUCATION AND ECONOMIC GROWTH: THEORETICAL ISSUES

3.1 Education and Economic Growth: An Economics Explanation

Two studies have examined the relationship between education and economic growth. These two studies are dominant and some other scholars have put them directly to use or refined them and used them to examine the role education plays in the economic growth of a country. The first study was done by T.W.Schultz in 1961 and the second by Denison in 1962. We will use both of these for our economic analysis and will review them briefly. But before we do that, we will examine the reasons these scholars looked at the relation between education and economic growth.

3.1.1 Education as a Factor in Economic Growth

By analyzing the growth in Gross National Product (GNP) on the basis of conventional sources of capital and labour, it was noticed that GNP was increasing at a faster rate than both capital and labor. Therefore, a large component of economic growth was left unexplained (Schultz, 1961:49). This component of unexplained economic growth is called "residual" in economic terms. Then an attempt was made to look at the sources which could explain the "residual".

The factors which can contribute to increase the performance of both capital and labor were examined to solve this puzzle. Education was one of the factors looked at. It

was reasoned that education raises the quality of the labor-force by providing skills and ability to perform a task. That is how education as a factor in economic growth was introduced.

Schultz (1961:47) argues that " We observe that no country with an illiterate population has a modern economy ...and no country with a high output per person is manned by workers who have only a low level of education. Are these wholly spurious relationships? The plausible answer is "no"." In sum, it is very important to look at the relationship between education and economic growth of a country. Schultz (1961) and Denison (1962) use different approaches to look at the relationship between education and economic growth. We will discuss their models separately.

3.1.2 Schultz's Model

Schultz uses an investment framework, a micro-economic approach which argues that "...education is an investment contributing to economic growth" (1961:46). Being at a micro level, the focus is on individual level. But Schultz argues that we can also estimate the contribution of education to economic growth at a macro-level by aggregating the data on individuals.

Schultz (1961:48) defines economic growth as "...an increase in production that gives a country more real income. Thus, increases in national income are a measure of economic growth." Schultz assumes that differences in

earnings of workers reflect differences in their productivity. His theory is based on the neo-classical principle, according to which money should be invested in those areas which have a high rate of return; and it is argued that investment in education has a high rate of return at both the individual and societal levels.

The rate-of-return at the individual level is termed private rate-of-return; and the rate-of-return at the societal level is termed social rate-of-return. The private rate of return to education is calculated by measuring the increased earnings of the individual which are a result of increased investment in education. The investment in education--is the total cost (both direct and indirect) to the individual and /or his family. An increase in the earnings of the individual due to additional education minus the costs put in to acquire education is the net return on the investment.[29]

The net social rate-of-return on education is the total (both direct and indirect) benefits minus the total costs from education for a society as a whole.

In sum, Schultz argues that education is an investment at both the individual and societal level. An individual invests in education to improve his abilities to perform a task, which leads to higher personal productivity and higher personal income. A nation invests in education to teach its population the skills required for higher productivity. Both

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[29] Schultz, 1961: 46-88.

personal productivity and overall productivity lead to higher economic growth.

In this study, we are concerned with the effect of education on the personal as well as overall productivity and income of the labor force. Denison's model examines the role of education in economic growth at a national level.

3.1.3 Denison's Model

The second approach was introduced by E.F. Denison. He analyzed the role of education in economic growth at a macro-level. He did a number of studies to examine the possible factors affecting the economic growth of a country. Denison found that education was one factor which contributed to economic growth.

Denison (1964) calculated the contribution of education to economic growth by measuring the earnings differentials based on education. Denison states that education contributes to economic growth by increasing the skills and ability or quality of workers which are responsible for increasing labor productivity. Also "...an upgrading of the educational background of the population may accelerate the rate at which society's stock of knowledge itself advances" (1964:22).

Denison used a linear and homogeneous aggregate production function model, in which technical progress is assumed to be neutral. The existence of competition in the labor market and constant returns to scale is also assumed

by Denison.[30] Denison's assumptions are:

> (In) the productive sphere, substitutions are possible between various categories of labor and the professional classes; and competition exists between employers so that the wage paid to an employee equals his marginal productivity. Entry into the independent professions is free, and since they operate in a competitive society the renumeration of persons who are not wage-earners also equals their marginal productivity (ibid.:62).

Denison analyzed the growth in the real national income in the United States between 1929 and 1957. Formal education was measured as average years of schooling of the labor force. He found that increased formal education accounted for 23% of the growth in real national income. Denison did not analyze the contribution of on-the-job training and adult education made to the growth of real national income because of "lack of information". He argued that education was a contributor to the economic growth because higher wages which are based on higher education, reflected higher productivity. He comments:"...earnings differences between groups of males of similar age, classified by education are taken to represent differences in their contributions to production or quality" (1962:126).

Denison delegated 3/5 of the income differential to the differences in level of education of the labor force and rest to natural ability and family background. Denison (1964:16) explains the contribution education made to economic growth of the United States:

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[30] The details of these assumptions are available in this paper. OECD, *Study Group in the Economics of Education, The Residual Factor and Economic Growth*, Paris: OECD, 1964.

> My conclusion...is that, from 1929 to 1957, the increase in education raised the average quality of labour force at an average annual rate of 0.93 per cent a year. What this rate implies is that an increase of 80 per cent in the average amount of schooling raised the average quality of labor by 30 per cent.

In sum, Denison(1962) and Schultz(1961) suggest that education contributes to economic growth by increasing the skills and ability or quality of the labor force, which is responsible for increasing labor productivity. Both models argue that higher wages are based on higher education, and reflect higher productivity. It is next argued, however, that higher income is not a good indicator of higher productivity; and higher productivity is not a result of skill training aspect of education alone. Education can have some other effects which can lead to higher productivity.

3.2 Education and Economic Growth: A Sociological Explanation

It is argued that Japanese education, while increasing an individual's ability to perform a task, also has some attitudinal effects. Japanese workers acquire traits of competition, conformism and hard work while going through the process of education. When these personal traits and skills are applied in a work situation, they make an important contribution to labor productivity.

A sociological explanation, thus, seeks to examine what economists have neglected. It should be mentioned here that other institutions such as religion, mass-media and the

family may also play a role in inculcating these values, but it is argued that education makes a significant contribution on its own. In chapter five, we will discuss how these personal traits affect economic productivity.

3.2.1 Theoretical Background

In this section, we will review some literature showing that education can affect people's attitudes, and furthermore that certain attitudes can contribute to economic productivity.

Several scholars argue that an individual learns some important attitudinal orientations in school which may be helpful for his/her social system (Moore, 1963; Inkeles, 1974; Kahl, 1968). The amount of education a person has received, according to Inkeles (1974:7), is the best and most consistent predictor of his values, attitudes, and behavior (1974:7). It is not only the school curriculum which affects the attitudes and values of the individuals but more important it is the effect of the structure of the educational system (ibid). Parsons (1959) made a similar argument when he studied the impact class-room structure has on students.

Inkeles (1969:213) states that "The modernizing effects follow not from the school's curriculum, but rather from its informal, implicit, and often unconcious program of dealing with its young charges." This position is supported by David O'Shea (1973/74:16): "The apparent effect of schooling may

be due to more than school curriculum: it may be the result of student participation within the structure of a formally organized system ..." Kahl (1968:137) contends that "...formal education in modern society...is the sorting mechanism which prepares men for their adult roles."

Inkeles (1974) studied the contribution of school in the development of personal attitudes of individuals in six countries. He (1974:22) concluded that:

> ...Our data show unambigiously that the schools in each of our six..countries..clearly had a substantial effect on the pupils exposed to their influence. Their pupils did learn. Furthermore, they learned more than reading, writing and figuring. Our tests show that they also learned values, attitudes and ways of behaving highly relevant to their personal development and to the future of their countries ("emphasis mine").

Therefore, our brief review suggests that education can affect personal attitudes. Now we will examine whether these attitudes can be a source of economic productivity.

Hagen (1975) argues that the rate-of-return analysis provided by Schultz(1961) has certain shortcomings because the differences in income of individuals is based on the level of education only:

> ...the differences in lifetime income are also due to differences in ability and motivation, and general knowledge indicates that these are connected with education. On the average, persons of greater mental ability certainly seek out and have access to more education, and their greater ability , rather than merely the education, gives them higher income. Similarly the, basket of personality elements that collectively constitute motivation is almost certainly positively correlated with education (persons more highly motivated toward working effectively will seek a greater degree of education), and undoubtedly affects lifetime income. Studies which do not separate out the effects of

> these factors therefore certainly overstate the causal influence of an individual's education on his income, and probably overstate it greatly (1975:306).

In sum, "...it is quite probable that as the degree of a person's intelligence and his motivations favorable to productivity increase, increased education is increasingly important to permit him to achieve his potential..." (ibid.).

Landes(1949) and Gerschenkron(1962) argue that the attitudes of people have an effect on the development of a country. Gerschenkron (1962:63) argues that:

> ...the character of entrepreneurial behavior in France has been a very important, perhaps the main, retarding factor in France's economic development and that behavior has been largely shaped by the prevailing value system in the country. It is in these terms that must be seen and explained the French entrepreneur's alleged aversion to risk and credit engagements, his conservative spirit, his dislike of sharp competitive practices, his interest in high profits rather than in large sales, the family character of the French enterprises and their small-scale size, to name only a few important points.

McClelland (1972) and DeVos (1973) support the argument that certain attitudes can contribute to economic growth. They argue that a nation filled with highly achievement oriented people is more likely to achieve economic growth, because such motivation induces them to work hard.

Finally, Colclough (1981:7) argues that "..schooling is still thought to nourish in students the traits required or preferred by employers..(And) Some minimum level of cognitive ability and set of attitudes clearly are necessary for all formal sector jobs; these are to some extent

imparted by schooling and are rewarded by wage differentials."

This brief study of the literature demonstrates that education has an effect on the personal attitudes, values and behavior of individuals and furthermore, that certain attitudes can affect the economic productivity of a nation.

In the next chapter we will examine whether educational supply (both in quantity and quality) was adequate for the economic needs of Japan during the postwar period. We will also examine the contribution of increased education per worker towards Japanese economic growth.

4. QUANTITATIVE AND QUALITATIVE EXPANSION OF EDUCATION AND JAPANESE ECONOMIC GROWTH

A recent survey by Richard Lynn, a British psychologist, reported that the Japanese have higher IQ scores than Americans and West Europeans.[31] West Europeans and Americans were rather surprised. His results indicate that:

> ...the average IQ (adjusted for U.S. performance standards) for the country's younger generation was highest in the world...(A)bout 10 percent of Japan's population has an IQ level of more than 130, while only 2 percent of Americans and West Europeans achieve that score..fully 77 percent of the Japanese have IQs above Western European and U.S. averages.
>
> By correlating Japanese and American results, (it was) determined that the average Japanese score as 111, compared with a U.S. score of 100...Even among those born in the 1930s and 1940s, Japanese consistently scored a few points higher than Americans (ibid.).

Why were the Japanese able to outperform their American and West Europeans counterparts? Some argue that the Japanese obtained high IQ scores because of the genetic effect (ibid.). This argument however, is not very convincing. It is generally believed that IQ scores are indicators of a people's intelligence (ibid.). And an individual's intelligence is in major part influenced by the amount and quality of education he or she has received. So, we should examine the Japanese educational development in

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[31] The survey was conducted by Richard Lynn, a British psychologist. A report of this survey appeared in *Discover*, the News Magazine of Science, Vol. 3, No. 9, September 1982: 19-24. My explanation is based on this report only, which was written by Sana Siwolop.

detail.

The purpose of this chapter is to examine the educational development in Japan and to judge its adequacy for economic development. Also we will examine the effects of increased education on national income.

4.1 What is the Purpose of Education?

Education in any quantity and quality holds little importance if it is unable to teach the skills required for the economic and social development of a country.

Edgar Faure *et al.* (1972:156) argue that "...the physical, intellectual, and ethical integration of the individual into a complete person is a broad definition of the fundamental aim of education." A major function of education is to prepare people for a work situation, so that economic activities can be carried on effectively and basic needs can be met (Sanyal, 1980:240). Higher education in any society:

> ...cannot justify its existence by providing only academic learning for mental or spiritual development; it has to convey the necessary skills for economic development in addition to cultural and social development, in order that natural resources might be explored and exploited, products stored and distributed, services managed, and resources conserved for future generations. Such skills would not only enable solutions to be found to present problems but also prepare "young people to work on the unpredictable, complex and dynamic problems of the future" (ibid.).[32]

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[32] The author of this article argues that higher education should be able to perform the above mentioned functions. But in my opinion, all kinds of education should have the above mentioned objectives.

Therefore, it is argued that education can only perform its function in a complete sense if it provides people with the skills and abilities required for formal employment when they graduate. Thrush and Smith (1980:17-8) state that:

> ...at a macro level, many outputs of the educational system become inputs into the economic system, such as school graduates meeting or not meeting national manpower requirements. And conversely, many economic outputs become inputs into the educational system, such as changing patterns of occupational distribution affecting the composition of students entering educational institutions.

Since the main purpose of education is to provide skills for formal employment, we should examine the sectors in which people seek employment. Countries differ in their labor force needs depending on their industrial structure.

4.2 Labor Force Needs of Postwar Japan

After World War II, there was a major shift from primary industry (agriculture and fishery) to secondary industry (mining, construction, manufacturing) and tertiary industry (wholesale and retail trade, transport and communications, services and government services). At the same time, technology was imported and widely implemented in industry. Small machines were replaced by large machines. "Science and invention produced new industries; and an increasing stress on industralization stimulat(ed) an increasing division of labor. These changes meant old occupations disappeared and new ones developed" (Thrush and Smith, 1980:37). Table 7 shows the changes in employment opportunities (in absolute numbers and percentage terms) in

various occupations during the postwar period (1950-80) (see appendix). We notice significant declines "...in the number employed in agriculture and the concurrent expansion of manufacturing and service-related employment" (ibid.).

The occupational distribution of the labor force changed in postwar Japan. The demand for professionals, managers, technicians, engineers, clerical workers and salesmen increased while demand for manual jobs declined (White Papers of Japan, 1960-80). The changes in industrial structure and occupational opportunities required changes in educational supply. Greater technical education and a higher level of education at all school levels were required.

The technology-related occupations have been in demand as they are now because of the kind of products made in the Japanese organizations. Improved equipment and a technically skilled labor force are crucial for making products such as cars, watches, ovens, color televisions, and calculators. Present day jobs demand a higher level of education and specialized techniques. The top ten occupations are in the field of technology and science and it is projected that engineering and technology-related occupations will be in great demand in coming years (Focus Japan, Jan. 1982.). Japan is in great need of engineers and technical workers because of manufacturing and "knowledge-intensive" industries.

Now that we have briefly determined the labor force needs of postwar Japan, we wish to examine whether

educational supply (both in quantity and quality) accorded with the changes in the industrial structure. In quantitative terms, we wish to examine if enrolments at all school levels rose. Since the quality of the labor force plays a vital role in the industrial growth of a nation, we also wish to examine if people were getting the kind of training required for industries (i.e. technical and science training--because of skill-intensive industries); if curriculum in schools changed according to the needs of the economy?

We will start with an overview of the educational situation in the pre-World War II period because people who were employed in 1950, received their education (during the period between 1900 and 1950), assuming that in general people join the labor force at age 15 and retire at age 65.[33] Because of the time gap between when people receive their education and when it has impact on the economy, we will examine the educational situation until the late 1970's.

4.3 Pre-World War II (1868-1950) Education

By the end of the Tokugawa period (1615-1868), literacy was wide-spread in Japan. It is estimated that up to 50 percent of the adult males were literate (Passin, 1965:47).

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[33] Ito (1963) and Dore (1964) have discussed the contribution of pre-war education to economic growth of Japan in detail. Since details are provided in these two studies, we will provide only an overview of the educational situation in the prewar period and discuss the contribution of prewar education to the economic growth of Japan.

A large number of educational institutions were established. In 1872, a modern educational system was introduced, which required four years of compulsory education. "In 1908 the education requirement was extended to six years and in 1947 to nine years, where it has remained" (Denison and Chung, 1976:197-8).

In the pre-World War II period, enrolments at the elementary school level first rose and then declined; enrolments rose consistently at the secondary and higher education level (Ito, 1963; Dore, 1964).[34]

Dore (1964:74) provides an overview of the content of education in the pre-World War II period:

> The 19th century curriculum was heavily weighted toward the three Rs. Reading, composition and calligraphy occupied over half of the total time, arithmetic just over a quarter and morals and physical education divided the rest. When the extra two years of primary education became compulsory in 1907, there was a considerable broadening of the curriculum--two weekly hours of science from the fifth year, three hours of history and geography combined, singing at all stages, drawing from the third year onwards, and sewing for girls...The next revision in 1919 took one hour away from reading and composition in order to give two each to history and

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[34] In 1905, 57.3 percent of the productive age population had received no education; 41.6 had completed only elementary education; another 0.9 percent completed secondary education; and another 0.2 percent had completed higher education (cited in Ito, 1963:43).

In 1925, 20.0 percent of the productive age population had received no education; 74.3 percent had completed elementary education; 4.9 percent had completed secondary education; and only 0.8 percent had completed higher education (ibid.).

By 1950, only 2.3 percent of the productive age population had received no education; 82.1 percent had completed elementary education; 9.2 percent had completed secondary education; and 1.6 percent had completed higher education (ibid.). We notice a steady increase in the level of education in the pre-World War II period.

> geography. A wartime revision further reduced the amount of time spent on basic subjects in the interests of physical training in "the military arts."

Analysis done by Dore (1964) suggests that in the pre-World War II period, enrolments in the field of engineering, commerce, natural science and technology rose both at the secondary and higher education level. "Between 1935 and 1940 attendance at engineering schools increased by 120 percent, compared with an expansion of 30-40 percent in other fields" (Dore, 1964:72). With the increase in enrolments in the above mentioned fields, enrolments in the field of law and the humanities decreased (ibid.).

During the pre-World War II period, the Japanese were also taught moral values in the schools. Ito (1963:46) argues that these moral values were helpful for the social and economic development of Japan. In the pre-World War II period, educational investment rose at all school levels. More funds were delegated to elementary education in comparison to secondary and higher education (Dore, 1964; Ito, 1963).

Dore(1964:68) argues that "...for the period 1930-55 education accounts for 25 percent of the growth in gross national product (GNP)..." Ito (1963) reaches at the same conclusion.[35]

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[35] Both results are obtained by using Schultz's model.

4.4 Postwar (1950-1980) Education

In this section, we will examine quantitative and qualitative development of education in postwar Japan.

4.4.1 Quantitative Supply of Education

In the postwar period, the Japanese educational system was reformed. New public education consisted of four stages. It included elementary education for 6 years; junior high education for 3 years; senior high education for 3 years; and higher education for another four years approximately. School was compulsory for the first nine years. Those who go for higher education can attend three basic types of institutions: colleges and universities, junior colleges, and technical colleges. A number of schools are available for handicapped children (Statistical Survey of Japan, 1982).

Did educational facilities expand with the expansion of industrial activity in postwar Japan? Yes. On the average, the number of educational facilities have increased during last thirty years. The number of elementary and middle schools have decreased over time. But high schools, higher technical schools, two year colleges and colleges and universities have increased in number. The technical schools have increased sharply in number; the number of two year colleges and colleges and universities have approximately doubled. Both private and public institutions were set up to meet the increasing demand of people seeking higher

education. Private institutions have increased faster than public institutions.

Enrolments increased at all school levels in postwar Japan. Almost 99 percent of the Japanese attend school up to nine compulsory years and roughly ninety percent of them graduate. Total enrolments have almost doubled in high schools and quadrupled in colleges. Since 1965, total enrolments in graduate schools have remained around 4-5 percent of the eligible population attending these institutions. Between 1955 and 1976, the number of institutions of higher education doubled and enrolments almost quadrupled (Ministry of Education, 1977). According to a recent estimate:

> In 1950, when the new system was put into practice, the number of university students jumped overnight from 83,000 to 370,000. If junior college students are included, the total is 450,000. The student population continued to grow at a remarkable rate: A decade later, in 1960, it numbered 710,000; 20 years later, 1,690,000; and 30 years later, in 1980, it had risen to 2,200,000 (Shimbori, 1980:236).

There has been a steady increase in the certificates, degrees and diplomas awarded between 1960-70.[36]

From this examination, we can conclude that in postwar Japan, the number of educational facilities rose, enrolments at all school levels rose, financed by private and public funds. Thus the overall level of education rose.

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[36] For details, see OECD, *Educational Statistics Yearbook*, Volume II, 1975.

4.4.2 Qualitative Expansion of Education: Aims and Content

Was the content and aim of education adequate for economic and social needs in the post-war period? We wish to examine if the curriculum was changed in schools according to the needs of the economy, if enrolments in courses appropriate to economic needs rose, and who helped shape the curriculum.

In the Meiji era, the main aim of education was to train leaders and teach nationalism to the young public. After 1911, the emphasis on moral education changed. The state realized that to achieve economic and social independence, talented people were needed who could run secondary and tertiary industries. Although the emphasis on moral education decreased, it did not disappear and is still found in school texts (Adams, 1970; Cummings, 1980).

"The Course of Study" was revised several times after 1947. Two major factors were taken into consideration: First, "...the increasing proportion of pupils going on to higher education" (White Papers of Japan, 1980-81:144). Second, the kinds of skills needed for the economic and social development of Japan. In consultation with the business sector, the education board revised the content of education, giving more emphasis to job related courses such as science, mathematics, computer technology and commerce.

4.4.3 Content of Education

In Japan, the central government sets the educational standards and recommends textbooks on each subject. Since educational standards are strictly enforced, Vogel (1979) argues that the Japanese educational system is able to provide a uniform level of education throughout Japan. He boasts: "It is impressive...how well schools throughout Japan ensure that virtually every pupil achieves minimal standards" (1979:175).

In elementary school, students take courses in social studies, Japanese language, mathematics, science, music, art and handicraft, home-making, physical education and moral education. In lower secondary schools, the required subjects include the Japanese language, social studies, mathematics, science, music, fine arts, health and physical education, industrial and democratic arts, moral education, special activities and elective subjects (Educational Standards in Japan, 1970). This curriculum is said to be "...quite comprehensive by American standards..." (Vogel, 1979:168)

The curriculum in Japanese schools is more demanding than in American system (Cummings, 1980; Vogel, 1979). The Japanese curriculum:

> ...covers a wide range of subjects and pursues these in greater depth than is the case for the curriculum of a typical U.S. school district. The differences are evident from the first grade of primary school. Young Japanese pupils spend a larger proportion of their time in subjects such as art, music and physical education than do American students ... Whereas many American schools do not offer a science curriculum at the primary school level, this is offered in Japan from the first grade. In

> arithmetic, a subject central to both the Japanese and American curricula, the Japanese texts move faster than a typical American text.
>
> In order to cover the demanding curriculum, the government requires each school to operate an educational program for at least 240 days each year, in contrast with 180 days for American schools. In most cases, this means that children attend school six days a week for over forty weeks. School occupies a very central place in the lives of Japanese children" (Cummings, 1980:10).

Japanese curriculum concentrates highly on the fields of science, math and technology--which are considered good because they prepare people for "skill intensive production" (Reich, 1983; Vogel, 1979). Reich (1983:213) argues that the American educational system is inadequate in the sense that it is unable to prepare pupils for the present day skill-intensive industries. According to him, technically and mechanically skilled people are in great need for skill-intensive production, but not enough numbers are being produced because of less emphasis on science and math courses in the initial years of education. Reich (1983:213) explains:

> Only one out of six high school students has any math or science training beyond tenth grade. Fewer than 10 percent of U.S. high school students study physics. Only 3 percent study calculus. While in 1960, 59 percent of American high school students took at least one science course, by 1977 the proportion was only 48 percent.

Therefore, "...in the fields of knowledge related to America's competitive position in the world economy, the decline in educational quality has been particularly dramatic" (Ibid.).

How did the Japanese educational system fare in providing education in those courses (science, engineering, mathematics and commerce) which were helpful for skill intensive industries?

As shown earlier, before World War II and in postwar Japan, more emphasis was given to courses on science, engineering, and mathematics. The quanitative analysis of people enrolled in science, engineering, mathematics and commerce courses over the years substantiates this statement.[37]

In 1972 the highest proportion of undergraduate students were majoring in social sciences (41.9); and the second highest were in engineering (21.1) at an undergraduate level. In the same year, the highest proportion of graduate students were majoring in the field of engineering (32.3).[38] In Japanese universities, colleges

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[37] Between 1950 and 1960, the number of students enrolled with majors in law, economics and commerce increased from 148,358 to 306,075; those who majored in engineering rose from 44,289 to 132,009; and those who majored in science climbed form 12,538 to 19,246 (Statistical Survey of Japan, 1950-60).

On the other hand, between 1950 and 1960, the number of students enrolled who majored in humanities decreased from 124,148 to 108,646 and those who majored in liberal arts decreased from 31,645 to 18,336 (ibid.).

Between 1960 and 1973, the number of students majoring in natural science rose from 16,405 to 46,493; those who majored in engineering climbed from 101,772 to 341,714; and those who majored in medicine increased from 28,115 to 67,874 (Statistical Survey of Japan, 1960-73).

Between 1973 and 1979, the enrolments of students majoring in natural science rose from 46,693 to 54,578; those who majored in engineering climbed from 341,714 to 360,910; and those who majored in medicine increased form 67,874 to 124,850 (Statistical Survey of Japan, 1973-79).

[38] Cited in OECD *Educational Expenditure in France, Japan and the United Kingdom*, Paris, 1977:213.

and vocational high schools--a large number of people are trained in the discipline of science and technology, of which engineering is a major part. The vocational technical school graduates are vital part of the Japanese industries where they are used as technicians. Therefore, it is clear that more emphasis was given to the courses which were useful for the business sector.

The number of technical schools and vocational institutions are also on the rise, which may prove vital for the present day industries. [39]

Who helped shape the curriculum in postwar Japan? In the postwar period, the business sector has played an important role in cooperation with the state. The business sector has been able to influence educational policies in postwar Japan, which aimed to help the Japanese economy.[40] The Japanese school curriculum not only teaches skills but also teaches morals--we will briefly dwell on that now.

4.4.4 Moral Education

Emphasis on morals is greatest in the initial years of education. Students are taught the importance of "work" and "diligence" in their early years (Cummings, 1980:181-2). In the third and fourth grade, children are taught about civic and national issues. "In the fifth grade, one again finds a concentration of work-related themes in the prescribed course" (ibid.). In sum,

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[39] For details, see White Papers of Japan, 1980-81:142.
[40] For details, see Shimahara, 1979, ch. 6.

> in the primary school curriculum, the purpose is to teach students that work is both (the) right and duty, that their labor contributes not only to their personal welfare but also to the broader society, and moreover, that the nature of work is undergoing rapid technological change (Cummings, 1980:185-6).

At the high school level people are more exposed to the nature of different kinds of work and how much prestige is given to different occupations (ibid.).

Teachers in Japan also act as socializing agents. Besides basic curriculum, they teach morals.

> Both through the moral education course and through a wide range of other activities, teachers try to convey certain moral principles to their pupils. They stress the egalitarian...and participatory orientations that constitute the egalitarian sentiment; yet, at the same time, teachers try to teach conventional values of friendship, cordiality, cooperation, and discipline (Cummings, 1980:14).

To summarize: the Japanese curriculum in schools was changed according to the needs of the economy; the Japanese cooperated with the government and the business sector by enrolling in those courses which were vital for economic productivity. The business sector influenced the policies regarding changes in the curriculum and the state cooperated with them. The Japanese receive quality education; their curriculum is demanding and comprehensive. The expansion of education requires capital investment, thus we will examine the educational investment situation in postwar Japan.

4.4.5 Educational Investment

The percentage of total governmental expenditure allocated to education has been around 20 percent during

1950-68. And total governmental expenditure has been around 24 percent of national income (White Papers of Japan, 1970-71:75). Approximately 90 percent of the funds were spent on school education; and less than 5 percent on social education, miscellaneous schools, and educational administration (ibid.:76). There was a remarkable increase in the educational expenditure per student among all levels of education during 1935-68 (see appendix, Table 8).

In 1978, the total expenditure on education was 13.9 trillion yen, which amounted to about 7 percent of Japan's gross national income. "The per capita expenditure in public educational institutions in 1978 was 4,140,000 Yen in schools for the blind, deaf and physically and mentally handicapped; 1,710,000 Yen in higher educational institutions; 560,000 Yen in upper secondary schools; 460,000 Yen in lower secondary schools; and 400,000 Yen in elementary schools" (White Papers of Japan, 1980-81:145).

In 1978, a total of 28% of the total educational funds were provided by national government, 56 percent by local governments, and only 15.5 by the school corporations (ibid.).

Parents also spend enormous amount of money on their children's education. In 1979, "...direct parental contribution to education per student per year was 71,000 (Yen) for public elementary schools, 103,000 (Yen)for public lower secondary schools, and 153,000 for public upper secondary schools" (ibid.:145).

From the foregoing examination, we can conclude that educational investment rose in postwar Japan; both private and public funds were delegated for expansion of educational facilities.

4.5 Supply and Demand of Labor

In the start of the postwar period, Japan had a surplus of labor, and this labor force was vital for emerging industries after the war. But due to expansion of the economy by the end of 1950, Japan started to experience a shortage of labor. The supply of labor increased by a small amount but the demand for labor was high due to expanding industries. The major reason for the shortage of labor was that more people were going for higher education after cumpulsory school education. They were trying to acquire skills for newly developed industries. Labor shortages also occurred because "...of a limited increase in population of productive age" (White Papers of Japan, 1970-71).

Labor productivity was rising. Industries looked for other ways to solve the labor shortage problem. Labor saving machines and larger machines and improved equipment were used to deal with the problem of labor shortage. Small group activities were introduced and more emphasis was given to on-the-job training. More emphasis was placed on the quality of the labor force (ibid.).

From 1965 to 1973, smaller firms as well as larger firms were in great need of skilled labor. In all sorts of

industries, including mining, construction, manufacturing, transportation and communication, electricity, gas and water, and reparing--labor shortages existed. Labor shortages were more pronounced in manufacturing industries (White Papers of Japan, 1974-75).

After the oil crisis of 1973, the employment situation reversed again and was led by high oil prices and low growth of economy. During the 1973 and 1977:

> The demand and supply of labor continued to slacken. The employment situation in the secondary industries, centering in manufacturing industries, continue to stagnate while the rate of decline in the number of employed persons eased in the primary industries and the number of employed persons in the tertiary industries registered an increase (White Papers of Japan, 1977-78: 128).

Job vacancies declined, whereas the supply of labor looking for work rose. In 1979, once again there was a small rise in the number of workers in the manufacturing sector.

In sum, labor shortages existed at different periods of time in postwar Japan. Now we will discuss the relevance of increasing enrolments at all school levels, increasing educational facilities and changes in skill development to the postwar economy.

4.6 Changes in Educational Supply and Labor Force Needs

The postwar Japanese economy needed a skilled labor force to achieve economic success.

In postwar Japan, several factors contributed to the attainment of a skilled labor force. On the whole, the job seekers with high levels of education rose. Table 9 compares

the number and percentage of new graduates looking for jobs , by educational attainment (see appendix). It is evident that an increasing number of people with higher education are seeking jobs in the 1980's compared to the 1950's.

Japan has also fared well by international standards in educating its population:

> In Japan, 90% of the population has graduated from high school, a figure far in excess of the American statistic of only 73%; this is also roughly three times the figures for England (32.5%), or for West Germany (27%). In the case of graduation from colleges and universities, the Japanese figure of 21% of the total population is the same as that for America, but twice that for England, West Germany, and France. [41]

More emphasis was given to mathematics, science and technology-related courses. These changes in the curriculum aimed to help the Japanese economy. The Japanese cooperated by enrolling in these courses in increasing numbers (as shown earlier). The graduates from technical and vocational institutions proved useful for the growing manufacturing sector as "middle range experts". The universities produced engineers in increasing numbers. Since competition between advanced nations was a "technical competition"--these engineers proved crucial for the economic success of Japan, as they provided the foundation for technological innovation. With their skills, they were able to improve imported technology, which could meet their individual needs effectively.

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[41] Cited in Nakagawa, 1979:21.

Although Japan had labor shortage problems in the postwar period, it is fair to say that the educational system in Japan was a vital force behind preparing people for the skill-intensive industries. We will illustrate this with an example.

Engineers are the backbone of Japan's "skill-intensive" industries. "Japanese industry is famous for the high quality of its products, and an important role in any company's quality control effort is played by its engineers, who are constantly designing new products and improving existing production systems" (Focus Japan, Oct., 1980). Engineers work closely with the blue-collar workers and even teach them skills (ibid.). In Japan, where the top ten occupations are in the fields of technology and science--the usefulness of these engineers is unquestionable.

Japan produces five times as many engineers per capita as the United States (McMillan, 1979:37). More engineers are produced because of a greater emphasis on mathematics and science in the earlier stages of education (as shown earlier).

Reich (1983) argues that Japan retains an advantage over the United States in terms of skill training and skills needed for present day industries.[42]

After this brief examination of the quantitative and qualitative expansion of education, we can say that the Japanese educational system has adequately served the needs

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[42] For details, see pp. 58.

of the Japanese economy. The education system was able to provide an industrious and well educated labor force, which can easily adapt to the needs of the economy. Also, new graduates were readily employed after graduation and were able to use the skills acquired from school.[43]

How will Japan fare in the coming years in terms of manpower needs? Vogel (1981:5) estimates that "...in terms of manpower, there is every reason to expect that Japan will do quite well in the 1980's in the kind of fields that are going to be important for international competitiveness."

4.7 Criticisms

Despite rising levels of education, the Japanese educational system has serious drawbacks. It has been unable to produce people who invent new technologies. The labor force is basically fit for innovating and improving imported technologies and lacks the skills to invent (Masatsugu, 1982:15-6).

With the mass production of highly educated individuals, the economic value of a college degree may come down, and consequently, highly educated individuals may have to take manual jobs (Ushiogi, 1979). The Japanese should carefully examine this situation.

Some argue that an increasing number of college and university graduates are going to cause some problems in the sense that there will be a shortage of manual workers (Kahn

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[43] For details, see White Papers of Japan, 1980/81.

and Pepper, 1979; Rohlen, 1979). Rohlen (1979:269) however, believes that "...for the near future the less-educated older worker population seems sufficient to guarantee adequate, if more expensive, manual labor needs."

Japanese are trying to device and employ new techniques in their industries which may take fewer man-hours to do the job. Japan is changing from labor-intensive to knowledge-intensive industries for some time now. For the latter kind of industries, present educational curriculum will prove useful.

So far, we have examined the educational development in Japan. Now we wish to find out the effects of increased education per worker on the economic growth of Japan.

4.8 Education as a Skill Provider and Japanese Economic Growth

Denison and Chung(1976) analyzed the role of education in economic growth in Japan at a macro level.[44] They calculated the contribution of education to economic growth by measuring actual earnings differentials based on education. Denison and Chung(1976) argue that education contributes to the economic growth of a nation by increasing the skills and ability or quality of workers which is responsible for increasing labor productivity. Therefore, they analyze only the "skill training" aspect of education.

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[44] For a complete discussion of their methods and procedures, see chapter two.

Denison and Chung(1976) found that the education of the work-force was an important contributor to the growth of national income during 1953-71. For the whole economy, an increase in the length of formal education accounted for 34% of the growth in real national income during 1953-71.

For the nonresidential business,[45] the increase in formal education accounted for 43 percent of the growth in national income during 1953-61; and 40 percent during 1961-71. Therefore, formal education was a vital source of economic growth in the post war period in Japan.

In the next chapter we will examine the effects of Japanese work-attitudes on labor productivity.

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[45] Nonresidential business includes agriculture and non-agriculture industries, wage and salary workers, self-employed and unpaid family workers.

5. EDUCATION, ATTITUDES AND LABOR PRODUCTIVITY

5.1 Introduction

The miraculous economic success in Japan has puzzled people all over the world. Their success has received mixed reactions of "...sarcasm, prejudice, fear, superiority complex, and learning. The learning type displays a willingness to learn from Japan's high labor productivity. This attitude, however, is shared by relatively few people" (Tsuji, 1981:511). We wish to adopt the "learning attitude". Western nations are envious of Japanese success, because despite being in an advantageous position with respect to technology and equipment, resources and capital, their labor productivity has been much lower. Japanese workers still retain a hard-work ethic, while in other advanced nations, workers' morale is eroding. Why is this so?

The Japanese are called "economic animals" by some--because Japanese workers tend to be industrious, adaptable and loyal to their employers; they do not use up all of their paid vacation time, and they "respond willingly to requests for overtime work" (Koshiro, 1980:46; Tsuji, 1981). Japanese are also said to be conformative, in the sense that they conform to the wishes of their employers and co-workers. They are also said to be very competitive. The first section will examine whether Japanese workers are as industrious, competitive and conformative as they are said to be. Do the attitudes of conformism, competition and

hard-work affect labor productivity? Do these attitudes motivate workers to produce more and therefore, act as a driving force behind economic productivity of Japan? This will constitute the first part of this chapter.

Are work-attitudes important? Attitudes of whom--managers or rank-and-file workers? Do attitudes of the labor force affect labor productivity?

(In)...present-day organizations, motivation actually has a considerable impact on productivity. This is true especially for skilled work. Motivation will become decisive as technological development becomes increasingly important" (Kosai, 1982:61). Harvey Leibenstein (1978), a Harvard economist, argues in his theory of organizational efficiency that the "effort" (or motivation) variable is important for the organizations (ibid.). According to him , managers with this "effort" variable are able to get more out of their labor force. They are efficient in devising means to influence workers to produce more.

Some argue that the industrial productivity of a nation can be affected by the attitudes of the labor force and that this relationship is found to be decisive (Ozawa, 1980:45). A high level of commitment, high worker morale, and little absenteeism--these are said to be the indicators of a work situation, where workers have a positive attitude toward work and vice-versa (Koshiro, 1980:50).

5.2 Hard Work Ethic and Economic Productivity

Are the Japanese industrious workers? We will check this by examining their work attitudes, rates of absence, and turnover rates. We will also examine how these factors influence labor productivity.

5.2.1 Attitudes Toward Work: A Comparison

What kind of work attitudes do Japanese workers have? Are they different from work attitudes in other advanced nations?

Workers in different countries attach different meanings to the word "work" and the importance of *work* in their lives varies (England, 1982:14). Japanese workers define work differently from their counterparts in the United States. Professor G.W. England examined the work-attitudes of Japanese and American workers. He found that:

> Japanese workers define work much more in terms of being responsible and accountable for what is expected of them than do American workers. American workers define work somewhat more in terms of the general contribution work makes to society and in terms of the personal impact of working upon the individual.
>
> The largest difference between the two countries involves the logic of defining work in terms of responsibility and accountability ("emphasis mine"). [46]

Also, it was suggested that Japanese workers give an unusual amount of importance to their work if compared with the workers in the United States. The findings suggest that:

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[46] Ibid.

> Working is highly important for about one-half of the Japanese workers and about one-fourth of the American workers. Working is of low importance for about one-fourth of the American workers and about one-eighth of the Japanese workers.
>
> ...45 percent of Japanese workers say "My work is the most important part of my life" compared to 23 percent of American workers.
>
> Clearly, working is significantly more important in the life of Japanese workers than in the life of American workers ("emphasis mine"). [47]

We note here that not all Japanese workers consider their work highly important. In fact only half of them do. Therefore, some appear to be more industrious than others. However, in general, the Japanese attach more importance to their work than their American counterparts. What is the significance of this? England (1982) argues that workers' definitions of and importance attached to work has important implications for the labor force and industrial organizations. It is claimed that: "...the higher the level of one's work importance, the more satisfied one is with one's life, the more hours one works and the more income one receives for working. Thus, high work importance is a positive situation for individuals, for organizations, and for societies."[48]

It is inappropriate to assume that just because Japanese workers define *work* in terms of "responsibility and accountability" and consider *work* as highly important, that in practical terms it is true. We will therefore, examine their work practices.

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[47] Ibid.
[48] Ibid.

How do these work attitudes affect labor productivity? Do Japanese workers feel responsible to improve the efficiency of the work process? Do they suggest ways which can improve the quality of the products? What kind of attitudes has management toward the workers? Do the attitudes of management help in any way to increase labor productivity?

The attitude of management toward workers has a decisive effect on the performance of workers (Pascale and Athos, 1981). The Japanese management approach is "employee-centered". According to human relations theory, such a management approach leads to "high morale, and high morale ..lead(s) to increased effort resulting in higher production."[49] Although the human relations theory lacks solid evidence,[50] the "employee centered" approach has been very successful in the Japanese organizations. Japanese managers not only show a concern for the welfare of the workers but also for their families. They trust their workers and listen to their suggestions. All these factors collectively bring the rank-and-file workers closer to management. Japanese assembly line workers tend to associate their personal success with the success of their work-group and their company and therefore, make every effort to increase the productivity of their company (Tsuji, 1981:511-7).

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[49] Cited in Perrow, 1972: 106.
[50] Perrow, 1972.

5.2.2 Hard Work Ethic and Quality of the Products

As mentioned earlier, Japan's economic success is mainly dependent on its ability to export consumer products.[51] From 1969 to 1981, Japan exported $21 billion worth more goods than it imported (Statistical Survey of Japan's Economy, 1982:43). Japanese consumer products have a world-wide market? To have a healthy export market, durable, reliable and competitive products are needed. The products should also be in demand. It is noticed that there is no match between the quality of Japanese products and products from other nations such as the United States and England (McMillan, 1982). Defect rates are generally lower in Japanese products if compared with American products (ibid.). Thus, Japanese products are durable, reliable and competitive and attract a world-wide market.

Is there a relationship between productivity and quality? Robert Lynas, examined this relationship. He argues that "...a 2% reduction in defects is usually accompained by a 10% increase in productivity."[52] Therefore, good quality products further enhance the industrial competitiveness of Japanese industries. How are the Japanese able to make better quality products than their American and European counterparts? Do they have a better quality labor force?

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[51] Some debate that growth of products in larger quantities at home led to exports, rather than exports leading to growth.

[52] Cited in Hayes, 1981:63.

We noticed earlier that the Japanese do not have better technology than their competitors and furthermore, they import most of it from other nations and refine it to meet their own needs. Therefore, they seem to concentrate on "process innovation" rather than "product innovation." Kosai (1982:60) explains:

> There are two types of innovation: product innovation, which creates new products, and process innovation, which improves manufacturing processes. Up to now Japan has been far more successful in latter than the former. This is the result of on-the-job training, total quality control, the employee suggestion system, and other Japanese labor practices...

How has "process innovation" sustained Japanese industrial competitiveness? How has the labor force contributed in this process? Are both management and rank-and-file workers involved in improving the quality of the products they make? Is Japan different from other nations in these respects?

In Japan, high quality products are made by a joint effort of management and the workers. Workers in Japanese factories participate in a complete sense in quality improvements. They provide suggestions which are studied by management and then implemented. The rank-and-file employees spend a great deal of time and effort coming up with suggestions which may improve the quality of the products. Suggestions about improving the efficiency of the work-process are also given to management. Extra hours are spent on such group activities. One group competes with the other attempting to provide more suggestions for quality and efficiency improvement. These groups are often referred to

as "Quality Control circles" and "Zero-defect movements"--in which employees work in small groups and the work process is mainly based on mutual help and responsibility (Ozawa, 1980). These "group activities" show that Japanese workers have "the high level of the will to work.." (Koshiro, 1980:50).

These activities are neither carried out in all organizations, nor by all the workers (Nakamura, 1983:62-5). Some are more enthusiastic than others in participating in the quality control process. Some workers even resent being involved--because economic benefits are so minimal. Moreover, they resent the fact that personal ability is not appreciated but credit usually goes to the group. This is a minority feeling though. A majority of workers feel that these quality control activities, carried in a group make the work-place more human (Saso and Kirby, 1982:58).

Q-C circle movements are more prevalent in big industries than in small companies. Incidently, products made in small companies are usually inferior to those made in large firms. Also labor productivity is lower in small firms compared to large companies (Saso and Kirby, 1982:48-9). This may well be due partly to the technical and equipment superiority of the large firms.

For workers to improve the quality of the products and efficiency of the work process, three major factors seem essential (Koike, 1981:35-6). First, workers should have the knowledge to perform these activities. Second, they should

be motivated to put such effort into their work--for financial or other reasons (ibid.). The third reason is explained by Koike (1981:36):

> ...Workers must be in a position of sufficient responsibility to be able to put their abilities to work and make improvements. Without the opportunity to use them, abilities are worthless assets. Workers who think up new ways of doing a job cannot put their methods into practice if their supervisors simply tell them to get on with their own work. The workers must have a certain amount of authority in the work place, which means that a kind of industrial democracy is necessary.

Do these three conditions exist in Japanese work organizations? It is fair to say that Japanese workers acquire the skills necessary to perform these activities from their school and job training; and that they are motivated to work hard. We wish to explore whether Japanese managers allow and encourage the rank-and-file workers to participate in the decision-making process and quality control activities.

The Japanese life-time employment system and decision-making process makes it possible for the assembly-line workers to participate in the decision-making process. Rank-and-file workers are encouraged by management to participate in group activities and the decision-making process. Ichiro Hattori, senior managing director of SEIKO, sheds some light on the Japanese way of management:

> In our (Japanese) style of management the process of decision making is not concentrated in the top management. The top management places emphasis on the vertical communication with lower-level managers, who actively participate in the process of corporate level decisions. Middle-level managers can participate in the top-level decision with their

> up-to-date information on what is going on in their respective sections and departments, because they are physically close to their staff members to attend to everyday occurances in the operations.
>
> "Participation"--to use an American expression --is an inherent feature in our decision-making process, and it is far-reaching."[53]

Since some form of authority is delegated to the general workers it gives them self-esteem and boosts their morale. This boost in morale motivates workers to produce more. Therefore, they participate in the making of better quality products.

According to the human relations theory: "Humans are assumed to desire to participate fully, to solve their "higher needs" of autonomy and self-actualization, and to wish to identify with the goals of the organization. They will do so if the leadership and structure of the organization will permit it."[54] As mentioned earlier, Japanese management encourages the rank-and-file workers to participate fully in work-related decisions. The Japanese way of management ("employee-centered") has proven to be successful; and assures cooperation from the rank-and-file workers.

Pascale and Athos(1981) argue that such a participative decision-making process has some points of strain in the sense that it takes a long time to reach a decision. However, they agree that since both management and assembly line workers collectively share in the decision making process, once a decision is reached, the likelihood of its

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[53] Cited in Ozawa, 1980: 49-50.
[54] Cited in Perrow, 1972:120.

approval by all increases (ibid.).

Why are the assembly line workers willing to cooperate with the management and do they hold similar goals to those of management? This may be partially because the gap between lower and higher income classes is narrow in Japan. Only 0.6% of the Japanese perceive themselves to be from the upper income class; 7.3 from the lower class; and more than 92% from the middle class.[55] "In a similar survey carried out by a labor union, about 70 percent of workers also regard themselves as middle-class earners" (Tsuji, 1981:513). There is no doubt that some Japanese hold unrealistic perceptions about which class they really belong to. Their perceptions are based on the view that an individual is able to climb up the ladder with hard-work and good education. The income differentials between managers, executive officers and general workers are not as wide in Japan as in other advanced nations (Tsuji, 1981:513). Tsuji (1981) elaborates:

> ...people in Japan have the least sense of social class perhaps in the world. The reason for this lies in the minimal degree of class discrimination between white and blue-collar workers. The wage gap between them has narrowed, and income equalization in Japan has actually progressed more than in the United States, West Germany or Sweden (ibid.).

A narrow gap between managers and assembly line workers further appears to enhance the likelihood of cooperation from the rank-and-file workers.

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[55] *An International Comparison*, Keizai Koho Center, Japan, 1982:73.

The Gini-index indicates the "...degree of egalitarianism displayed by income distribution in various countries" (Nakagawa, 1979:30). The lower the Gini-coefficient the more even the income distribution and vice-versa. In 1965 Japan achieved a Gini coefficient of .32, which was considerably lower than compared with the United States .40 (1964); France .52 (1962); Germany .47 (1964); and Canada .38 (1969). In 1970 Japan achieved a Gini coefficient of .28, which was significantly lower than compared with the United States .381 (1972); France .414 (1970); Germany .383 (1973) (OECD, 1976; Boltho, 1975). Although in all advanced countries the income distribution is getting more even with time, Japan leads other advanced nations with respect to equal income distribution (Boltho, 1975:166-7). Boltho (1975) also indicates that in Japan "...income has become more evenly distributed over the postwar period." "The amount of income directed toward the lower strata..." is increasing (Nakagawa, 1979:30).

On the other hand, the gap between the lower and upper classes is wider in other Western nations (Boltho, 1975). Saso and Kirby (1983:58) argue that this may be partially the reason why "...the introduction of quality control circles into Ford's UK plant was, in April 1981, rejected by the unions concerned." In American organizations, most work related decisions are made in the board rooms by managers only and participation of the workers in the decision making process is almost nil (Pascale and Athos, 1981). Therefore,

American workers leave the job of quality improvement to the management. They are neither willing nor encouraged by their employers to participate in suggesting ways to improve product quality. (Pascale and Athos, 1981). From the foregoing examination, we can conclude that attitudes of rank-and-file workers seem to be important to carry out activities like quality control circles. If management is unable or unwilling to seek cooperation from the rank-and-file workers, the likelihood of participation from the lower-level workers is likely to be low.

A comparison of workers suggestions to management in Japan and the United States was done. This study suggests that:

> ...(T)he number of usable suggestions is much higher in Japan than the U.S....General Motors of Detroit received an average of 0.84 suggestions per eligible employee per year, and adopted 23 percent. In 1980, Toyota received 17.9 suggestions per employee, and adopted close to 90 per cent.[56]

A comparison of suggestions per worker in Japan and the United States indicates that Japanese industries are provided with more suggestions per worker. More workers in Japanese factories are involved in improving the efficiency of the work process and the quality of the products than in the United States and the Japanese industrial competitiveness is sustained by such efforts of the work force.

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[56] Cited by C.J.McMillan in "From quality control to quality management: Lessons from Japan," *Business Quarterly*, Spring 1982:37. Originally appeared in "Giving Better Ideas a Chance," *Focus Japan*, Volume 8, February 1981.

A nationwide study was done by two Tokyo-based associations: Japan Human Relations Association and the Japanese Association of Suggestion Systems. They studied the suggestions given by the rank-and-file industrial workers in the 453 corporations. Their study suggests that:

> ...the 453 corporations, during Japan's last fiscal year 1980 (ending March this year), registered 23,530,000 suggestions or a per capita average of 12.82 from among their combined total of 1,830,000 rank-and-file payroll workers below the supervisory class. The most idea-prolific worker made more than 6,900 suggestions singlehandedly during that period of only one year. The 12.82 per-worker suggestions also represented a sharp increase over the preceding annual figure of 7.1.
>
> In...American industries, the corresponding per-worker figure in 1979 was no more than 0.15 suggestions. The great disparity was doubtless an eloquent testimony to the Japanese industrial workers' strong devotion to, or affection for, their jobs.[57]

Although it is difficult to calculate the importance of workers suggestions, the above mentioned study makes an effort. It is claimed that the adopted suggestions were estimated to have a value of 225.3 billion yen; and workers who made valuable suggestions were awarded 8.1 billion yen. Other merits of such a suggestion system include "...enhancing the spirit of participation among the work forces, building better understanding between the rank-and-file and the supervisory personnel, and activation of the whole corporate organization" (ibid.).

Saso and Kirby (1982:58,60) claim that "...quality control, as practised in Japan, has made the shopfloor a

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[57] Appeared in *The Japan Economic Review*, Tuesday, September 15, 1981: 11.

more human place, despite automation; and moreover, "...the humanisation promoted by quality control activities in Japan's factories may temporarily relieve the alienation often associated with automation." Cole (1971:92) argues that Japanese companies implement the group activities such as quality control circles to induce workers to work together and increase productivity. Takezawa (1976:36) claims that these group activities have helped to improve the morale of workers and reduce turnover. Therefore, as the above discussion suggests, both labor and the management seem to benefit from these group activities. Still, there remains some points of strain in such a process. As noticed earlier, the workers receive very little economic benefits (only 8.1 billion Yen out of total profits of 225.3 billion yen) while a major portion of economic benefits are reaped by the companies and employers. Individual ability is not given proper credit, as credit goes to the group. Individuals in a group are coerced by other members of the group to do some tasks which they may resent.

Although technology, equipment and the capital can be easily transferred from Japan to the United States, Ando (1980) argues that the Japanese firms are fearful of opening branch-plants in the United States. They do not expect the same level of efficiency, skills and precision from the American workers. Also different kinds of job attitudes are expected in foreign workers which may hinder production.[58]

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[58] For details, see Ando, 1980:50-1.

These are some of the examples of Japanese work practices which seem to show us that the Japanese are industrious and diligent workers.

5.3 Morale of Workers: A Comparison

The Japanese management approach is "employee-centered" (Ouchi, 1981; Pascale and Athos, 1981). According to human relations theory, such an approach will "...lead to increased productivity on the part of employees...; will reduce turnover...and absenteeism, thus raising productivity by minimizing both training time and the disruption caused by absent workers."[59] Although there is lack of solid evidence to substantiate this theory (Perrow, 1972), the "employee-centered" management approach has been quite successful in the Japanese organizations.

Attendance and absentee rates are considered good indicators of workers' "...will to work and work discipline" (Koshiro, 1980:48). As will be shown later, absenteeism and turnover rates are lower in Japan if compared with other advanced nations. We wish to find out why it is so.

5.3.1 Low Incidence of Worker Absenteeism

Industries in many Western nations are plagued with high absenteeism rates among blue-collar workers. Reasons associated with the high absenteeism rate include ill health and low worker morale. Absenteeism due to drug and alcohol

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[59] Cited in Perrow, 1972:120.

related causes is on the rise in many Western nations (Koshiro, 1980; Tsuji, 1981).

On the other hand, Japanese industries have a low absenteeism rate. For example, in Japanese maufacturing firms, absenteeism is "...only one-tenth of that of the United States, and absence without notice is almost nonexistent" (Tsuji, 1981:511). Koshiro (1980:46-47) performed a survey on absenteeism rates in twelve Japanese representative companies in both the private and public sectors. He concluded that: the "pure absenteeism rate," which includes "failure to work because of illness, accident or unauthorized leave...is at most two percent and more often around the one percent mark." Surprisingly, in the public sector industries, which generally have poorer efficiency than private sector industries, absenteeism rates are low (ibid.). Absentee rates in Japanese factories may be low because workers do not use all of their paid vacation time (ibid.).

Now we will demonstrate with an example that Japanese workers feel a responsibility toward their work and conform to the wishes of their employers and co-workers.

In densely populated Japan, most people commute to work by trains. Even in the event of a train strike, most people reach work on time and come to work despite a great deal of trouble. Hamaguchi (1981) studied the work attitudes of employees and employers during a transportation strike. "The survey included questions on what companies expected workers

to do and what workers actually did in the event of a public tranportation strike" (p. 47). Here are the results of this survey:

> ...(A)bout 60% of the respondents replied that their companies expected all employees to report to work as usual, while slightly under 20% said that their companies left the decision of whether to go to work or not upto employees. When employees were asked what they actually did in such circumstances, 63% said they used whatever means available to get to work, while only 11% said they stayed home. Cross tabulation of these results (shows)....that 69% of those allowed to decide for themselves chose to go to work, more than three times the ratio of those who stayed home (ibid).

We notice that most workers did what was expected of them, to come to work despite the hardships of a transportation strike. Although not all workers show the same level of commitment to their work, most made every effort to be at work, so that the productivity of their company may not be affected in a negative way. The same author also asked why workers wanted to be at work during the transportation strike. Most frequently, the workers replied that it is their responsibility to be at work; and they thought that "...work would be impeded by their absence" (ibid). Some thought that they had to be at work, fearing that their co-workers and employers might criticize their actions otherwise. In sum, "...almost 60% said they went to work despite a transportation strike because of a sense of responsibility to their work or because their work would be held up."[60]

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[60] Ibid.

This survey shows that a majority of Japanese workers show a great deal of responsibility toward their work. They conform to the wishes of employers. We noticed earlier that a majority of Japanese workers define work in terms of "responsibility", and give high importance to their work. The foregoing discussion suggests that these attitudes affect labor productivity. These factors indicate that Japanese workers are hard-working and loyal to their jobs and companies. Such traits of hard-work and conformity are useful when Japanese industries seek a keen competition from other rival firms in their own country and competitive firms in other nations.

5.3.2 Low Turnover Rate

Turnover or separation rates are considered indicators of "...dissatisfaction or failure of a worker to adjust" (Koshiro, 1980:48). However, it is argued that:

> ...(the) changing of jobs is proof in a free market place that the most appropriate distribution of resources is taking place, and it is not necessarily true that the lower the separation rate the better off an economy is. According to neoclassical economics hypothesis on the completely competitive market, labor turnover is essential in order to bring about equilibrium in the labor market...
>
> However, with the development of the internal labor market, excessive labor turnover is liable to be lacking in economic efficiency...(ibid).

Japanese workers tend to show a high level of commitment to their jobs. Quitting rates are fairly low in all kinds of Japanese industries. A Labor Statistical Survey suggests that in manufacturing industries the separation

rate per year is only 2%, about half of the United States rate and about one-fourth of the Australian (ibid). A turnover rate of 2 percent in Japanese industries "is considered to be efficient" (Ibid.). Another reason why the turnover rate is low in Japanese organizations is due to the life-time employment system and the internal promotion system. There are some points of strain in the life-time employment system in the sense that during recessions employers are not able to layoff redundant workers. The life-time employment system is best suited for industries which are growing and will continue to prosper.

What are the consequences of low turnover rates? "As far as (the) organization is concerned, a stable labor force facilitates the systematic execution of work. Long-term technological development is also impossible without stable employment" (Hamaguchi, 1981:56). Low quitting rates reduce training costs. Therefore, the benefits of a stable labor force further enhance the economic strength of Japan.

A comparison of Japanese workers with workers in other countries clearly suggests that the trait of hard work in the Japanese workers is very useful for economic productivity.

5.4 Attitudes of Competition and Conformism and Japanese Economic Growth

The Japanese work in groups and in a group situation; individuals reinforce each other to work hard. Groups do not

appear to have room for an idle person because he is bound to be criticized by other members of the group. Since the Japanese workers highly value membership in their work-group, it is less likely that they would slack-off against the wishes of the group. Individuals in a group seem to emphasize group success rather than individual success. Also

> Groups are all the more motivated to compete aggressively with one another because the group base provides support and security. Individual aggressiveness is directed outward; it is group contained and group enhancing. Under these circumstances, *Intragroup harmony* develops, and each group is strongly goal oriented. But a keen, sometimes bitter, *intergroup rivalry* occurs. An individual's competitive instinct, suppressed within the group for the sake of harmony, is encouraged to express itself freely outward, and he or she becomes an aggressive go-getter outside the group. In short, competition between goal-oriented, solidified groups is much fiercer and more dynamic than that between atomistic individuals (Ozawa, 1980: 46.)

In work situations, one group of workers is constantly competing with other groups of workers. They are always attempting to out do each other. A company as a group is competing with another company; and on a national basis, the Japanese compete with the Western nations. Masatsugu (1982:88) comments:

> Competition between groups (is intense)..The most dangerous enemy is the company that produces the same product.
>
> This rivalry stirs up a spirit of enthusiasm that encourages development and increases production. Thus, as long as it is not excessive, it is a healthy phenomenon.

What is the effect of constant intense competition between groups of workers; and conformity to group activities and

company goals? Ishida (1971:38-9) argues that this helps to increase productivity:

> Among company employees, for instance, a strong sense of identity with the company and conformity to its goals is accompanied by a sense of competition both externally with other companies and internally in loyalty to their own company. It is easy to see that strong conformity among workers in the same company correlates with their inclination to compete with other companies in the same field. Thus conformity not only does not stand in the way of competition, but actually contributes to it.
>
> But more important here is the fact that competition among the workers themselves is not destructive of conformity, since it is competition in loyalty to the company. In this way, competition results in unanimity of effort. This sort of competition is not an indication of individualism in the strict sense; it is rather the obverse of group conformity: The orientation of the members of the group is not toward individual achievement, but toward merit acquired by individual contribution to the goal of the group.

In sum, conformity to the group and the employers in combination with the traits of competition and hard work help to increase labor productivity. These are the factors on which Japanese economic strength is based. As workers in one firm are always eager to compete with those in the other firm, Ozawa (1980:46-7) argues that

> ...no wonder Japanese workers can be easily induced to strive for improved productivity when management encourages them to outproduce their competitors or when they are threatened by outside competition...

Japanese workers are conformists. During their adolescent years, they conform to the wishes of their parents, their friends and most importantly, their educational system. When they graduate from school and go to work, they conform to the group they work in and also to the employers. They tend to give group interests priority over

their personal interests.[61] It is also claimed that conformity to the group contributes to economic growth because "groupism ..prompt(s) employees to work hard" (ibid.). From this examination, it appears that these traits of competition and conformism act as strong motivators in a work situation.

Japanese workers compete and conform partially due to personal reasons. There are individual benefits in staying with one company. Because of the life-time employment system and employment based on initial education, those who leave a firm are not able to find a better job elsewhere. So, it is in workers' interest to manitain long-term ties with a company. But this is not the real reason why Japanese workers conform, compete and work hard.[62]

Not all the Japanese like groupism, group-oriented organizations or like to conform to the group. So, where do these individuals go? Ozawa (1980:47) contends that:

> ...Japanese workers are (not) docile--in the demeaning sense of blindly submissive--as is generally believed in the West...Japanese business society has ample room for highly original and independent individuals to operate their own businesses in relative freedom, provided they are willing to give up the economic security possible under paternalism.

A majority of Japanese seem to like to work for a large firm and accept groupism, but those who do not, "...start business on their own or join smaller organizations" (ibid.). Therefore, there is some room for those who prefer

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[61] For details, see Tsuji, 1981: 511.
[62] Detailed discussion is provided in the first chapter.

"individualism" rather than "groupism".

Japanese workers do not use all of their paid vacation time. In the manufacturing sector, 13.9 paid holidays were allowed in 1977; and on the average, only 8.8 holidays were used.[63] Tsuji (1981:515) argues that there are no economic incentives to remain at work during paid vacation time. But Japanese workers reason that work in the company will be impeded by their absence. Also due to their conforming character, they believe that absence from work may cause inconveience to their employers and co-workers (Tsuji, 1981:515). Thus, a very low rate of absenteeism is found in Japanese industries, which also enhances their productivity.

Why do Japanese workers do more overtime work than their Western counterparts? Do they work overtime for economic reasons, for the benefit of the industry, or because of the wishes of their employers?

The annual average of overtime hours is 162 for the Japanese and 110 for West Germans.[64] Japanese workers do get a rate of premium for overtime; but it is lower than what is given in the United States. The rate of premium for overtime for most American firms is around 50 percent. In Japan:

> The rate of premium for overtime for 90 percent of all companies is 25 percent and for car manufacturers is 30 percent....Ever since 1947, wholesalers and retailers with less than 30 employees, beauty parlors, hospitals, social welfare institutions, movie theaters, restaurants, hotels and entertainment establishments have been exempt

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[63] *An International Comparison*, Keizai Koho Center, Japan, 1982:59.
[64] *An International Comparison*, Keizai Koho Center, Japan, 1982:59.

> from paying overtime allowances for the overtime up to 9 hours a day or 54 hours a week.
>
> People who work for such small establishments number 9.3 million nationwide. Since Japan's total workforce is 40 million, this means that one out of every four workers receives no overtime allowance. These people and about 7 million independent operators are truly hard workers (Tsuji, 1981:515).

The Japanese do overtime work because they depend on overtime bonuses as a part of their salary (ibid.). Economic benefits are part of the reason why the Japanese work overtime, but we find that the Japanese do not work overtime just for economic reasons. They are industrious and have the conforming character. If industry has decided to speed up the production, they willingly conform to the wishes of the company (Hayes, 1980:64). They work overtime and under a great deal of pressure to ensure that the products needed by their company are ready in time. Professor Hayes comments:

> ...Japanese workers...willingly worked up to 60 hours of overtime per month (3 hours per day) when demand was high.
>
> Their willingness to do so was encouraged by their knowledge that management understood intimately the difficulties and pressures under which they operated and was working just as hard as they were (ibid.:64).

In sum, conformity to the group and to the employers stimulates the Japanese to work hard. These factors are important assets for the economic efficiency of Japanese industries.

Some argue that work-attitudes of the Japanese are changing. Young workers are more likely to show individualist characteristics and do not prefer groupism, which pressures them to work hard (Masatsugu, 1982). These

claims may have some significance in the sense that young workers are not as much committed to their work as their grandparents or parents were. But the Japanese still retain their hard work ethic. College seniors were surveyed recently and their opinions were sought on issues of overtime work and working for long hours (Focus Japan, October 1981). Results indicate that the young Japanese are not really afraid of long hours or working overtime. About 79 percent said they would't mind if they had to work on saturdays; 41.7 said they wouldn't mind working overtime frequently. This data suggests that a majority of Japanese "are not afraid of hard work." However, their attitudes may change with the economic affluence they are enjoying now.

Now the question arises, from where do the traits of conformism, competition and hard-work come? As mentioned in the first chapter, few explanations are given for the industrious character of the Japanese. But here we will develop our argument as to why the Japanese have these traits. Since attitudes are strongly affected by the socialization in the younger years, we will explore the possibility that the Japanese acquire these traits when they are in school.

5.5 Education and Attitudes

In the third chapter, it was established that the formal education system has an effect on the personal attitudes, values and behavior of individuals and that

furthermore, certain attitudes can affect the economic producitivity of a nation. The second part of this chapter examines the effects of Japanese education and their educational system on people's attitudes values and behavior. Does Japanese education mold people's character? If yes, in what way? Does formal education socialize the Japanese to *compete*, *conform*, and *work-hard*? Or do these cultural traits pre-date the education system and manifest themselves in school and work? The purpose of this section is to find the answers to the above mentioned questions in a logical and analytical manner.

Japanese education provides people not only with skills but also molds their character. Japanese education is structured in a unique way. At every stage there is an entrance examination, where competition among students is fierce. As will be shown later, such a structure has an important impact on the attitudes of the Japanese.

We will start with the question: Why has Japan a well-educated labor force?

In Japan, "people enter more or less desirable firms and at different levels"--depending on their initial education (Argyle, 1972:219). Most Japanese aim to get jobs in the large prestigious firms because of good salaries and pleasant working conditions, which, hardly exist in small and medium-sized firms. The lifetime income differentials between large, medium and small firms are large because of the "dual structure" of Japanese organizations. "Dual

structure"--means that those who work for large firms get higher wages than those who work for small and medium-sized organizations. "Average monthly wages paid in 1973 by size of firms were (with the wages paid by the firms employing over 500 persons as 100): 100-400 employees, 82.0; 30-99 employees, 70.9; and 5-29 employees, 60.8" (Yamamura and Hanley, 1975-76:95). Employees of most large firms are assured of life-time jobs and are given bonuses. However, people keenly seek to work for a prestigious firm not only for economic reasons. Tsuji (1981:514) argues that the Japanese also want to work for prestigious firms, because these firms provide security and prestige to their employees.

The educational attainment is an important determinant of the career chances of an individual. People strive for higher education to improve their career chances.[65] Large firms are more likely to employ their executive officers and managerial personnel from the reputed universities. The graduates of prestigious universities have greater chances of finding jobs with the government, which is considered

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[65] Abegglen (1973:181) comments on the significance of initial education for the Japanese: "Education in Japan almost totally determines career chances. Point of entry into the company hierarchy, compensation for the career, and chances for a high-status position in the career are substantially determined by the amount of education the employee obtains before joining the company and thus the status level at which he enters.....Virtually all the members of top management of the companies studied had university education. This is generally true of Japanese management, which has a higher level of formal education than management in the United States and far beyond that of such European countries as the United Kingdom."

reputable in Japan. Therefore, initial education becomes a key factor on which their employment and careers depend.

Although initial education also is a major determinant of people's careers and employment in the United States, the employment criterion is less rigid. People can go to work after high school and after a few years of work can return to school to further their education. They can also get a better job on account of their personal abilities and experiences from the previous jobs. But in Japan, career depends on initial education. Employment is based on initial education and employees are promoted within the same company at different levels. Their salaries depend upon their initial education. Those initially employed by small or medium-sized firms have very little chance of getting jobs with a prestigious firm at a later period. Therefore, in Japan, initial education shapes the rest of an individual's career.[66]

The second reason why Japan has a well educated labor force is because education has replaced family background as the key determinant of social status.

Since initial educaton is a major determinant of the career chances of an individual, we should examine if Japan have an egalitarian system of education? Admissions to reputed schools are based on entrance examinations and everyone has an equal opportunity to receive education, in theory.

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[66] For details, see Nakane, 1979:113-14.

Although the Japanese educational system provides equal opportunity to people from all backgrounds, it does not mean that children from all social backgrounds are able to make use of the opportunities provided. Table 10 shows that high income families are able to afford better education for their children than lower income families (see appendix). The private institutions are better and more expensive than the public or national institutions; and children from higher income families are more likely to receive education in the private institutions than children from lower income families. There are private schools at the primary and secondary level, which children from well-off families are able to use. This shows that the Japanese educational system is not egalitarian, and therefore, serves the rich better and puts strains on the poor.

Therefore, a correlation exists between social class and educational achievement. Although all are tested by the same examinations, the children from higher income strata are more likely to take advantage of the existing educational system, and are more likely to receive better education in better schools than the children from lower class families. Educational achievement is a major source for upward mobility; and children from higher income families have better chances of being upwardly mobile than children from lower income classes (Cummings, 1980).

Educational background is the main determinant of social status in present day Japan. People with higher

education have higher social status and vice-versa (ibid.). This factor emphasizes the importance of education in Japan.

5.5.1 Inculcation of Values of Hard-Work, Conformism and Competition

So far we have examined the reasons why Japan has a well-educated labor force. Now we wish to examine whether and how the Japanese educational system inculcates the values of hard-work, competition and conformism?

A majority of people desire to work for a prestigious firm after graduating from school (Cole, 1974). Employment in a reputed firm is desired because of economic and social status reasons (as described earlier). Employment is desired in the industries which are booming. The Japanese "with low academic ability, or who do not care to attend college, are stigmatized as failures very early in life" (Shimbori, 1980:243). The only way to gain employment with a reputed organization is to have high academic scores on the university entrance examinations.

The Japanese start preparation for the university examinations when they are young. They compete for admission to good elementary schools to improve their chances of getting admission to good high schools. The graduates from good high schools have better chances of passing entrance examinations to join well-known and prestigious universities. At every stage of entrance, there is an

intense competition,[67] as Ouchi (1981:19) describes:

> There is fierce competition to enter the top high schools, which can give students the most rigorous preparation for the university entrance examinations. This translates into pressure to enter the top primary schools, which enhance the student's chances of getting in top secondary school.

It is argued that "...schooling in Japan involves more intense competition than in other societies" (Nakane, 1980). Although at all school levels students compete fiercely, competition to join prestigious universities is the severest of all. Recent estimates suggest that only 40 percent actually make it to the university. The rest decide to go to work, prepare them for university exams for next year or join vocational institutions. Of those, who join vocational institutions, or go to less prestigious schools and receive low scores on the entrance examinations are most likely to be employed by small or medium-sized companies.

Higher education has become crucial in getting a job with a prestigious firm, which has affected enrolments at the university levels considerably.

The well-known and prestigious firms select the "upper reaches of the labour pool's intelligense elite by recruiting procedures in which significance is attached to formal schooling, to academic grades, and to the substantive content of education." [68] These prestigious corporations tend to select their labor-force from the prestigious universities in Japan, such as the University of Tokyo.

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[67] Also Ozawa, 1980:53-54.
[68] Industrialization and Modernization, p.27.

> The Japanese seem to attach more importance to the prestige of the university from which their children are graduated than any other nationality, and they do so with good reason as admittance to the most prestigious universities is almost a prerequisite for attaining the highest status in Japanese society (Yamamura and Henley, 1975-76:96).

In contrast to Japanese universities, anybody can seek admission to American or Canadian universities. There is no doubt that some universities have higher standards and thus, are ranked higher than the others. Americans do not seem to attach as much importance to the prestige of the university. If they are unable to get admission to a high ranking university, they try a low ranking one. Also competition to join universities in America is not that intense--maybe because there are enough universities to meet the demands of people seeking admission. Although American organizations may well like to select their work-force from high ranking universities, they do not seem to be as rigid as Japanese employers. In American organizations, people are employed not on the basis of the reputation of their university and initial education alone but also their personal ability, work experience etc. The American employment system seems to be more considerate of people's personal abilities. The Japanese employment system is criticized for putting too much pressure on youth at the age of 18 when they compete for university examinations, and also because it appears to ignore the personal abilities of individuals.

There is a scarcity of large and prestigious universities in Japan and people have to undergo an intense

competition to join them. Because an increasing number of people are applying to fewer universities--competition to join them becomes more severe. Entrance examinations are based on the Darwinian principle, according to which "only the most academically fit survive and enter the top schools" (Ozawa, 1980:53).

The competition to join good universities is fierce. Every year fresh graduates apply for admission to the universities. They are joined by a large number of "ronins" who did not get admission to the universities of their choice the year before. Some students write these annual examinations six or more times, hoping to get admission into the reputed universities.[69]

We would expect that the unsuccessful would give up. Surprisingly, despite frustrations caused by such a system, the dropout rate remains low in Japan. Vogel (1979:161-2) compares drop-out rates in Japanese and American schools:

> By the late 1970s over ninety percent of both Japanese girls and boys were completing high school, compared to approximately eighty percent of all American youth. Virtually all Japanese who enter a school complete it. In 1975, for example, ninety-seven percent of those entering high school completed it, compared with seventy-nine percent in America... Although approximately thirty-five to fourty percent of college-aged youth were attending a university both in the United States and Japan, because of sizeable numbers of American drop-outs, Japanese more often complete their training. Almost forty percent of Japanese males in their mid-twenties have completed four-year colleges compared to about twenty percent of Americans.

The drop-out rate may be low in Japanese educational

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[69] For details, see Yamamura and Henley, 1975-76:98.

institutions partially because youngsters realize the importance of initial education, and therefore, persevere, conform, compete and work-hard during their earlier years of life. The pressure from school, peers and parents may further enhance the chances that a student will continue with his schooling.

Also we would expect that delinquency rates would be high as a consequence of strains from the educational system. We might expect those who are unsuccessful to rebel by turning to delinquents. By international standards, delinquency rates are low in Japan. There does not appear to be any relationship between school performance and delinquency on the basis of the fact that since 1965, the delinquency rates have declined (Cummings, 1980:230-1).

From the foregoing discussion, it appears that Japanese youngsters realize the importance of initial education in their life and do not see a better alternative . Thus, they restrain themselves and conform to their parents, peers and the educational system. Therefore, the educational system in Japan appears to foster the attitude of conformism.

Many students attend extra schools called JUKU to improve their scores on the university entrance examinations. This preparation starts at an early age (Cummings, 1980, Vogel, 1979). Some parents send their children to private schools, where they get special attention and study for longer hours.[70]

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[70] For details, see Ichikawa, 1979:53.

In sum, the foregoing discussion suggests that emphasis on entrance examinations and initial education is related to the lack of inter-job mobility. Although people can move to different jobs and different positions within the same firm, there is lack of inter-job mobility. Therefore, structure of opportunity has an effect on what kind of education people will aspire for. So far, we have described the nature of the Japanese educational system which appears to put tremendous pressure on the youngsters, and demands hard-work, competition and conformism from them. What are the effects of such an educational system on individuals?

To summarize: most Japanese compete fiercely at all school levels. To compete, they have to work very hard. They go to extra schools and work for longer hours during the early years of life, so that they can get better scores on entrance examinations. What is the significance of intense competition and hard work during school years? Japanese youngsters are socialized to compete, work-hard and conform to the wishes of the group. Such a socialization is not opposed by the majority of people because the *group* provides them with security and prestige.

How does an individual competition with other students in school turn into group competition in a work situation? Since a student is in fierce competition with other students, we would expect that it might create a sense of individualism in him/her. Because an individual in such a situation is concerned with his success in the entrance

examinations and not with the success of his peers. How is individual competition related to *groupism*? Vogel (1979) argues in support of our hypothesis that formal education is a key perpetuator of values of *groupism, hard-work, conformism and competition:*

> By the time the Japanese student enters a good high school or good university, he has internalized attitudes about hard work. He may not have enjoyed the pressure of examination hell, but he has learned discipline as well as mastered a body of knowledge. For all the excesses of the entrance examination system, the desire to succeed...maintains group solidarity and the motivation to study. In entrance examinations a student's competition is not with a small circle of intimate friends but with thousands of unknowns who want to enter the same institution. The strong attachment of the student to his peer group in school, to his family, to his teachers, and they to him, greatly reinforces the motivation to study. All want the student to succeed. In later life, it is again in large part the individual's attachment to the work group and his long-term time perspective that makes him want to master materials that might someday prove useful to him, his work group, and the company at large. As a result of the examination system the nation acquires a large reservoir of well-trained people with a substantial core of common culture, people who are curious, teachable, disciplined... Despite complaints, no one has moved to weaken entrance examinations, for no one has yet devised a better system to maintain motivation, hard work, and family and social solidarity (166-7).

Thus, individual competition in schools leads to *groupism.* If the formal school is a key perpetuator of group characteristics, how does it inculcate the trait of "groupism" among the Japanese? Vogel (1979:178) explains the process of inculcation of group values among the Japanese while they are in school:

> Much of the student's study time, outside as well as inside the regular class room, is spent in group study. Through group projects, group trips,

> classroom organization, and above all through close-knit activity clubs with memberships lasting several years a student is not only allowed to enjoy group life but taught to be sensitive to his peers and to restrain personal egoism. Indeed, student organizations themselves play a major role in advising a student about ways to gain the respect of his peers. This prepares the student for life in a modern organization, where he is expected to develop a long-range commitment to work peers and to be considerate of them.

From the foregoing discussion, it is fair to say that *even if the Japanese do not get admission to reputed universities in the end or decide to go to work after graduation from school, they have acquired the basic skills and more importantly, the personal traits of competition, conformism and hard-work.*

Do these attitudes stay with the Japanese when they quit school and go to work? Theories of child development suggest that "children enter their most significant stage of value learning after, not before, they enter school" (Cummings, 1980:178). Most Japanese youngsters attend school after the age of 5 and moreover, the period of socialization is long (15 years or longer), enough to be these attitudes part of an individual. It is a well established theory in the psychology literature that most people will do what they are socialized to do. Based on the above mentioned theoretical facts, it is fair to assume that attitudes of competition, conformism and hard work stay with the Japanese when they quit school and go to work.

So far, we have shown that during their school years, Japanese youngsters are socialized to compete, work-hard and

conform. Now we wish to examine whether formal education is an independent and important cause of these attitudes.

School, mass-media and the family are major socializing agents in a society. It is expected that these agents will inculcate these attitudes among the Japanese. We argue that formal education is an independent and important perpetuator of values for three reasons. First, school is a central place in the life of Japanese youngsters (Cummings, 1980). They spend more time in school than at any other place. Second, through the moral education course, youngsters are socialized to compete, conform and hard work. Teachers put emphasis on morals of *groupism, discipline, cooperation and diligence*. Thus, moral education is part of the curriculum, which teaches these attitudes. Third, as discussed before, the strcture of educational system reinforces the values of competition, conformism and hard work.

Now we will compare the socializing effects of the family, the mass-media and school. Fukutake (1974:44) indicates that:

> Japanese parents are hesitant to instruct (moral education to) their children....Parents are reluctant to shape their children's morality, for they are uncertain what orientations will be appropriate later on.[71]

Parents depend on schools to provide moral education to their children (ibid.). Cummings (1981:97-8) argues that school is a key agent to perpetuate values:

> ...once children enter the primary school they become school centered. Not only do children spend

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[71] Cited in Cummings, 1981:97.

> the majority of waking hours at school, but they also begin to view the school and educational achievement as one of the major purposes and sources of satisfaction. Teachers come to compete with parents as objects of admiration...the school experience gradually draws young people away from their families...With every year in child's life, this tendency becomes more profound so that by the middle school years the family's influence is sharply reduced.

Since Japanese youngsters spend less time with their parents and more time in school with their peers, opinions of their peers have a greater influence on them (Cummings, 1981:97-9). The foregoing discussion suggests that the family has less effect on formation of values than school.

The mass media is another source which contributes to the formation of attitudes. Children in the 10 to 15 years of age category spend an average of eight hours and four minutes on studies, as compared to 20 minutes on reading books, 8 minutes on radio and 2 hours and 22 minutes watching television (White Papers of Japan, 1970-71). Since time-exposure to the mass-media is less and there is no confirmation of the fact that the mass-media perpetuates the values of competition, conformism and hard-work--it will be fair to expect that mass-media may not have as much effect as the school system, where the children spend most of their daytime.

Shuichi (1974) studied Japanese group activities in detail and concluded that the formal education has an independent and important role in formation of values of *groupism* among Japanese youngsters. He (1974:34-5) claims that:

> The...group activities are largely perpetuated by Japan's educational system. Two types of education should be distinguished: formal school education and informal school education. The main objective of Japanese school education is to prepare students for university entrance examinations through long years of memorization and drilling. This kind of study produces young people trained to accept group information and to conform to given values, rather than to develop their own individual thought patterns. Social education supplements school education in three main ways. First, the powerful "mass media" contributes to molding public taste and opinion. ...The second major form of social education in Japan is provided by the company...
>
> Third, social education is performed by the company bureaucracy and the government bureaucracy.....Thus, educational effects of society outside schools are, as in the case of school education, functioning to give permanence to the present situation ("emphasis mine").

The foregoing discussion clearly suggests that during their school yeras, the Japanese are socialized to compete, work-hard and conform. Although other socializing agents may inculcate these attitudes, formal education has an independent and important role in their formation.

Although the Japanese educational system produces the industrious, competitive and conformative labor force, and these attitudes lead to increased productivity, it is under a lot of criticism. It is criticized by children, parents and teachers. Criticism is mainly based on the fact that it puts a tremendous amount of strain on youngsters. A high rate of suicide among young people is often associated with the strains from the educational system. Japanese students have to study for longer hours and then compete fiercely during school years and therefore, they spend very little time on leisure and exercise. Youngsters complain of being

lonely and frustrated (Cummings, 1981; Vogel, 1979).

The Japanese educational system is criticized by parents because they have to spend a lot of money on their children's education. The Japanese have restricted fertility so that they can provide better education to fewer number of children (Yamamura and Hanley, 1975-76). Not all parents are able to afford such expensive education. Poorer families especially are under a lot of strain. Teachers complain that the quality of students is deteriorating because of the coersion they have to face (Cummings, 1980).

Despite all these criticisms, in general, it is believed that the competitive educational system may be harsh but is an objective determinant of people's skills and capabilities. Despite its failings, parents, teachers, children and the Japanese government support the educational system.

Some argue that the Japanese government has not done much to change, because they actually support the kind of functions their educational system performs (Cummings, 1980:81). "A recent platform statement of the Liberal Democratic Party stated that "competition is the basic principle of life--it brings the best out of men" (Toyama, 1976:27).[72]

> Government and business leaders make no secret of their belief in the efficiency of educational competition. They say it helps them to select the nation's most able youths for their organizations. They may differ on some of the details: the government continues to rely on the University of

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[72] Cited in Cummings, 1980:81.

> Tokyo as its principal supplier of high civil servants, for it feels the products of this school will be most intelligent and disciplined and their common school tie will add to the civil service's esprit de corps...(Cummings, 1980:81).

As we noticed in chapter three, the Japanese government also helped change the curriculum in the school so that it would serve the best interests of the business sector. As long as the Japanese government supports the Japanese educational system, there is no hope that any significant changes will be made to cure the ills of present educational system.

A recent survey substantiates our argument about the socializing effects of formal schooling. Prospective graduates, hunting for jobs, were surveyed recently (Focus Japan, October 1981). Among other things, they were asked "Which factors do you consider essential for success?" About 87% of the graduates answered that "hard-work" is the key to success; 66.7 percent replied that "ability" is. More than 55 percent considered "perseverance" as a key factor essential for success. Although we realize that other aspects of the Japanese society, such as socialization from home, mass-media, religion etc., may be responsible for such a response from the school graduates, socialization from school appears to make an important contribution on its own.

In my opinion, the effect of socialization from school is reflected in answers to the factors needed to be successful. Because, at an earlier age, Japanese students realize the importance of specialized skills and higher education, which provide the means to a job with a

prestigious company. And while going through the process of education students learn the importance of hard work to achieve those goals.

We also note some similarity in what the Japanese do in the school and what they do in a work situation. For example, the Japanese spend more time in school (calculated in days per year); and stay in school for longer hours, if compared with the United States. The Japanese attend school 240 days instead of 180 days schedule in the United States (Cummings, 1980:10). A similar pattern is reflected in their working hours.

In conclusion, the traits of competition, conformism and hard work motivate workers to produce more and thus contribute to labor productivity. The Japanese educational system, no doubt, has been a key perpetuator of attitudes of competition, conformism and hard-work.

6. CONCLUSION

This thesis analyzed the contribution of education to economic growth of Japan in the postwar period. We present our problem in the first chapter. In the second chapter, we found that labor productivity in Japanese industries is generally higher than in other advanced nations. It is also an important source of Japanese economic growth.

The third chapter examined the theoretical background. According to economists--education contributes to economic growth by increasing the skills and ability or quality of the labor force, which is responsible for increasing labor productivity. It was also established that education has an effect on the personal attitudes, values and behavior of individuals and furthermore, certain attitudes can affect the economic productivity of a nation.

The fourth chapter focused on the quantitative and qualitative expansion of education and its relation to Japanese economic growth. In postwar Japan, number of educational facilities rose, enrolments at all school levels went up and both private and public funds were delegated to achieve expansion of education at all school levels. Therefore, the overall level of education rose. Also, curriculum in schools was changed. More emphasis was given to mathematics, science and technology-related courses. These changes in the curriculum aimed to help the Japanese economy. Although Japan had labor shortage problems in the

postwar period, it is fair to say that educational system in Japan was a vital force behind preparing people for the skill-intensive industries.

The fifth chapter examined the effects of attitudes on labor productivity. It was found that the traits of competition, conformism and hard-work (which the Japanese acquire form school) motivate them to produce more. There exists a harmonious relationship between management and rank-and-file workers. Japanese management provides effective leadership and always seeks cooperation from rank-and-file workers. The assembly line workers tend to be dedicated to their work. Japanese workers are conformists. They conform to the group they work in and also to the employers. The Japanese work in groups and individuals reinforce each other to work hard.

We also found that the Japanese educational system was an independent and important inculcator of the traits of competition, conformism and hard-work. The educational system is structured in such a way that a large number of people compete for a few prestigious institutions. The educational institutions encourage the traits of competition, conformism and hard-work; which are highly valued by the employers. The Japanese educational system educates the people in the same way as demanded by industry; therefore, workers do what is expected of them by their employers. This kind of combination does not exist in any other country.

For the Japanese, the educational institutions are not only skill providers, but also socializers. They not only train students with the skills required for the jobs; but train them to be disciplined, hard working, conformist and competitive. While skills provide the Japanese with an ability to work in economic organizations; these traits provide the necessary motivation to do so. Japanese education is

> ...a function of political and economic institutions.....its primary goals are to mold individuals so as to promote organizational imperatives. For this purpose, Japanese are trained to be diligent, resilient, and convergent and to endure organizational pressures (Shimahara, 1979:170).

6.1 Implications

From the Japanese experience, we learn that for economic growth the few factors are crucial: a skilled labor force; quality work and products; harmonious relationship between management and workers and cooperative relationship between government, business and workers. We also find that personal abilities and attitudes of both managers and rank-and-file workers have a decisive affect on their job performances. The management should keenly seek cooperation from the rank-and-file workers, to involve them in the decision-making processes and protect their layoffs. An "employee-centered" management approach aids in improving labor-management relations.

We have only analyzed the contribution of formal schooling to Japanese economic growth. For future research, it will be useful to examine the role of other types of education--i.e. job-related training and adult education. For further research, it will also be useful to examine the role of other socializing agents as inculcators of the work-related attitudes and their effects on labor productivity. It will also be appropriate to analyze the relationships between different socializing agents in detail.

It will be instructional to analyze the factors not only unique to Japan, but to find out what kind of factors are common to both Japan and the United States, which may lead to economic success.

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TABLE 1

Relative Positions of Gross National Products of Selected Countries (1951-1981)

	Japan		U.S.A.		Germany F.R.		France		U.K.	
	Amount (US$ billion)	Index (USA =100)	Amount (US$ billion)	Index (USA =100)	Amount (US$ billion)	Index (USA =100)	Amount (US$ billion)	Index (USA =100)	Amount (US$ billion)	Index (USA =100)
1951	14.2	4.3	328.4	100.0	28.5	8.7	35.1	10.7	41.4	12.6
1955	22.7	5.7	398.0	100.0	43.0	10.8	49.2	12.4	53.9	13.5
1960	39.1	7.8	503.8	100.0	70.7	14.0	60.0	11.9	71.9	14.3
1965	88.8	12.9	688.1	100.0	115.1	16.7	99.2	14.4	100.2	14.6
1968	146.4	16.8	873.4	100.0	133.8	15.3	127.6	14.6	105.2	12.0
1970	203.1	20.5	992.7	100.0	185.5	18.7	145.5	14.7	124.0	12.5
1975	498.2	32.2	1,549.2	100.0	420.6	27.1	339.7	21.9	234.8	15.2
1978	963.3	44.7	2,156.1	100.0	642.6	29.8	476.5	22.1	317.6	14.7
1979	998.9	41.4	2,413.9	100.0	762.8	31.6	576.1	23.9	409.9	17.0
1980	1,035.8	39.4	2,626.1	100.0	820.8	31.3	656.0	25.0	523.6	19.9
1981	1,127.0	38.5	2,925.5	100.0	686.7	23.5	--	--	--	--

Note: Current U.S. dollar figures are calculated according to the annual average exchange rates of the IMF. International Statistics. U.S.A. = 100 for all years.

Source: Keizai Koho Center, An International Comparison, 1982:3.

TABLE 2

Annual Earnings and the Tax/Benefit Position of a Typical Worker in Major Countries (1980)[a] (US$)

	Annual Gross Earnings[b] (A)	Payments to Government				Cash Transfers from the Government (F)	Disposable Income (G=A-B+F)	Disposable Income Ratio (G/A)	Rate of Income Tax Paid [(C+D)/A]	Rate of Social Security Paid (E/A)
		Total (B=C+D+E)	Income Tax (C)	Additional Income Tax (D)	Social Security (E)					
Japan[c]	16,960	1,735	650	393	692	-	15,225	89.77	6.15	4.08
Canada	15,210	2,105	1,039	710	356	447	13,552	89.10	11.50	2.34
U.S.A.	14,949	2,782	1,233	633	916	-	12,167	81.39	12.48	6.13
U.K.	14,866	3,966	2,963	-	1,003	1,003	11,933	80.27	19.93	6.74
France	12,106	1,549	-	-	1,549	1,062	11,619	95.98	-	12.80
Italy	10,284	1,859	1,057	-	802	818	9,243	89.88	10.28	7.80

a) Male, manufacturing sector worker with a two-child family where the wife is not working.
b) U.S. dollar figures are calculated according to the annual average exchange rates of the IMF. International Financial Statistics.
c) U.S.$1.00 = ¥226.75.

Source: Keizai Koho Center, An International Comparison, 1982:61.

TABLE 3

High Growth Rate of Japan's Labor Productivity
by International Standard
(Manufacturing industries)

	1960-1973 Average (A)	1974-1978 Average (B)	1978
Japan	10.7	5.3	8.5
U.S.	3.6	2.3	1.9
W. Germany	5.9	3.7	2.7
France	6.5	3.9	5.2
Britain	3.5	0.8	1.0
Italy	5.9	3.1	2.6
Canada	4.5	3.3	6.4

Note: Labor productivity = production of manufacturing industries/ labor input of manufacturing industries (number of workers x working hours).

Source: Economic Survey of Japan, 1979/80: 158.

TABLE 4

Relative Indexes of Output per hour in Manufacturing, 1970-81
(1970 = 100)

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom
Output per hour							
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	100.7	101.2	101.0	100.4	98.9	98.1	98.7
1972	98.5	100.0	105.9	98.9	98.0	99.0	99.4
1973	96.5	100.3	109.5	96.9	96.2	103.8	98.4
1974	91.0	103.6	110.2	97.2	98.7	105.8	96.5
1975	92.6	98.4	112.3	98.4	102.9	98.1	92.1
1976	90.3	98.7	115.9	99.6	102.8	99.6	89.5
1977	88.8	99.8	120.4	101.0	104.2	96.6	87.5
1978	85.9	99.6	126.3	103.0	103.2	95.8	87.1
1979	82.3	99.4	132.9	103.0	103.1	98.3	86.0
1980	81.0	95.4	140.3	102.3	102.1	102.1	84.8
1981	81.1	93.0	140.5	100.6	101.6	102.3	87.4

Source: Capdevielle et al. 1982:10.

TABLE 5

Annual percentage changes in output, 1960-81

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom
Output per hour:							
1960-81	2.7	3.6	9.2	5.5	5.2	5.8	3.6
1960-73	3.0	4.5	10.7	6.0	5.5	6.9	4.3
1973-81	1.7	1.4	6.8	4.6	4.5	3.7	2.2
1974	-2.4	2.2	2.4	3.5	5.4	4.9	.8
1975	2.9	-2.6	3.9	3.1	5.3	-4.4	-2.0
1976	4.4	5.3	9.4	8.2	7.1	8.6	4.0
1977	2.5	4.0	7.2	5.1	4.9	1.1	1.6
1978	.9	1.6	7.9	5.7	3.3	3.0	3.3
1979	.7	1.7	8.9	4.9	4.9	7.3	3.3
1980	.2	-3.3	6.8	1.6	1.4	5.8	.6
1981	2.8	.3	3.2	1.6	2.7	3.4	5.9
Output:							
1960-81	3.6	4.8	10.0	5.2	3.8	5.4	1.6
1960-73	4.7	6.3	13.0	6.6	5.2	6.8	3.0
1973-81	2.3	2.0	6.5	2.3	1.9	3.3	-1.7
1974	-4.2	3.6	-2.0	3.2	- .3	6.4	-1.2
1975	-7.1	-5.9	-4.0	-2.1	-4.8	-9.7	-7.0
1976	9.6	5.9	13.3	7.0	8.0	12.6	2.0
1977	6.9	2.0	7.3	3.7	2.4	2.1	1.9
1978	5.3	5.0	7.3	3.2	1.3	1.8	.6
1979	2.7	4.7	9.9	2.6	4.8	6.7	.2
1980	-4.3	-3.1	9.4	- .1	.5	6.3	-9.1
1981	2.3	1.6	3.2	-2.7	-1.4	-1.0	-6.3

Note: Rates of change computed from the least squares trend of the logarithms of the index numbers.

Source: Capdevielle et al. 1982:4

TABLE 6

Large Scale and High Efficiency of Japanese Businesses

Type of Industry	Country	Productivity Indexes (¥1,000/worker)	
		Labor Productivity	Capital Equipment Ratio
		1977	1977
Comprenehsive electrical machinery	Japan (1974)	5,633	2,555
	U.S.	5.441	2,427
Department stores	Japan	5,876	3,501
	W. Germany	4,618	3,553

Notes:

1 Comparison covers those enterprises in each country which rank first in production value in their respective industries.

2 (Gross value added) labor productivity = gross value added/average workforce at beginning and end of business term (¥1,000/worker).

$$\text{Capital equipment ratio} = \frac{\text{Average book value of tangible fixed assets at beginning and end of business term}}{\text{Average workforce at beginning and end of business term}} \text{ (¥1,000/worker)}$$

3 Exchange rate: ¥360 to the U.S. dollar for 1970, ¥268.5 for 1977.

Source: Economic Survey of Japan, 1979-80:133.

TABLE 7

Structure of Employment in Japan (1950 - 1981)

	Number (1,000 persons)							Composition (%)					
		Primary	Secondary			Tertiary		Primary	Secondary			Tertiary	
	Total Employed	Total	Total	Manu-facturing	Con-struction	Total	Whole-sale and Retail	Total	Total	Manu-facturing	Con-struction	Total	Whole-sale and Retail
1950	35,626	17,208	7,812	5,690	1,531	10,605	3,963	48.3	21.9	16.0	4.3	29.8	11.1
1960	43,719	14,240	12,762	9,545	2,679	16,717	6,910	32.6	29.2	21.8	6.1	38.2	15.8
1970	52,042	10,066	17,651	13,442	3,993	24,325	10,014	19.3	33.9	25.8	7.7	46.8	19.2
1981	55,810	5,570	19,390	13,850	5,440	30,850	14,740	10.0	34.7	24.8	9.7	55.3	26.4

Source: Keizai Koho Center, An International Comparison, 1982:13.

TABLE 8

Changes in the Amount of Japanese Public and Private School Education Expenditures per Pupil by Educational Level

1. Real Amounts[1]

(Unit:yen)

Year	Preprimary Education	Compulsory Education	Upper Secondary Education	Higher Education
1935	13,896	11,911	42,186	167,253
1950	12,058	13,136	20,555	100,309
1954-56	19,002	22,162	37,535	129,346
1960	22,929	32,317	54,415	193,926
1965	34,890	61,023	79,117	294,699
1968	44,125	84,979	102,197	283,325

2. Indices

Year	Indices Taking Compulsory Education as the Base				Indices Taking 1954-56 Amounts as the Base			
	Pre-primary Education	Com-pulsory Education	Upper Secondary Education	Higher Education	Pre-primary Education	Com-pulsory Education	Upper Secondary Education	Higher Education
1935	117	100	354	1,404	73	54	112	129
1950	92	100	156	764	63	59	55	78
1954-56	86	100	169	584	100	100	100	100
1960	71	100	168	600	121	146	145	150
1965	57	100	130	483	184	275	211	228
1968	52	100	120	333	232	383	272	219

(1) Real amounts are adjusted to the 1968 value of yen.

Source: White Papers of Japan, 1970-71:77.

TABLE 9

New Graduates Looking for Jobs,
by Educational Attainment, 1955-85

Year	Compulsory School Graduates	High School Graduates	College Graduates	Total
		Number (thousands)		
1955	700	340	90	1,130
1960	680	570	120	1,370
1965	630	630	150	1,410
1970	270	730	260	1,260
1974	130	580	320	1,030
1980 (est.)	90	580	420	1,090
1985 (est.)	50	550	500	1,100
		Percent		
1955	62.0	30.0	8.0	100.0
1960	49.6	41.6	8.8	100.0
1965	44.7	44.7	10.6	100.0
1970	21.4	57.9	20.6	100.0
1974	12.6	56.3	31.1	100.0
1980 (est.)	8.3	53.2	38.5	100.0
1985 (est.)	4.5	50.0	45.5	100.0

Note: "College" = two- and four-year colleges and universities.

Source: Ushiogi, 1979:108.

TABLE 10

Percentage of all Students from each of five Income Strata, 1961-76

	1961		1965		1970		1974		1976	
National Universities										
I	19.7	39.9	16.3	31.4	17.3	31.2	14.4	25.6	12.7	25.0
II	20.2		15.1		13.9		11.2		12.3	
III	15.4		18.6		17.7		16.0		15.1	
IV	18.5	44.7	22.5	50.1	21.2	50.4	24.3	58.4	24.5	59.9
V	26.2		27.6		29.2		34.1		35.4	
Private Universities										
I	6.4	15.6	4.8	11.6	5.8	11.9	6.1	12.6	5.6	13.3
II	9.2		6.8		6.1		6.5		7.7	
III	12.3		11.1		13.3		11.6		10.6	
IV	19.2	72.1	20.9	77.3	22.3	74.8	21.2	75.8	25.4	76.1
V	52.9		56.4		52.5		54.6		50.7	
All four-year Universities										
I	11.0	24.1	8.3	18.7	8.5	16.5	8.0	15.5	7.2	15.9
II	13.1		10.4		8.0		7.5		8.7	
III	13.5		13.4		14.4		12.6		11.6	
IV	19.1	62.3	21.7	67.9	22.0	69.0	21.8	71.9	25.2	72.5
V	43.2		46.2		47.0		50.1		47.3	

Notes: I = lowest income; V = highest income.
Each stratum represents 20 percent of all households in Japan.

Source: Cummings, 1980:226.